Government Publications

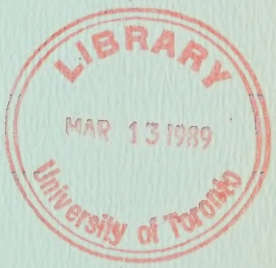
EA-87-02

CA2ON
EAB
-H26



Ontario

ENVIRONMENTAL ASSESSMENT BOARD



VOLUME: 78

DATE: Thursday, March 2nd, 1989

BEFORE: M.I. JEFFERY, Q.C., Chairman
E. MARTEL, Member
A. KOVEN, Member

FOR HEARING UPDATES CALL (TOLL-FREE): 1-800-387-8810

FARR & ASSOCIATES REPORTING INC.

(416) 482-3277

2300 Yonge St., Suite 709, Toronto, Canada M4P 1E4


Digitized by the Internet Archive
in 2023 with funding from
University of Toronto

https://archive.org/details/31761116520222

EA-87-02 Government Publication

CA2ON
EAB
-H26

Ontario

ENVIRONMENTAL ASSESSMENT BOARD

LIBRARY
MAR 13 1989
University of Toronto

VOLUME: 78

DATE: Thursday, March 2nd, 1989

BEFORE: M.I. JEFFERY, Q.C., Chairman
E. MARTEL, Member
A. KOVEN, Member

FOR HEARING UPDATES CALL (TOLL-FREE): 1-800-387-8810

EARR & ASSOCIATES REPORTING INC.

(416) 482-3277

2300 Yonge St., Suite 709, Toronto, Canada M4P 1E4

EA-87-02

HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental Assessment for Timber Management on Crown Lands in Ontario;

- and -

IN THE MATTER of an Order-in-Council (O.C. 2449/87) authorizing the Environmental Assessment Board to administer a funding program, in connection with the environmental assessment hearing with respect to the Timber Management Class Environmental Assessment, and to distribute funds to qualified participants.

Hearing held at the Ramada Prince Arthur Hotel, 17 North Cumberland St., Thunder Bay, Ontario, on Thursday, March 2nd, 1989, commencing at 9:00 a.m.

VOLUME 78

BEFORE:

MR. MICHAEL I. JEFFERY, Q.C.	Chairman
MR. ELIE MARTEL	Member
MRS. ANNE KOVEN	Member

A P P E A R A N C E S

MR. V. FREIDIN, Q.C.) MS. C. BLASTORAH) MS. K. MURPHY) MS. Y. HERSCHER)	MINISTRY OF NATURAL RESOURCES
MR. B. CAMPBELL) MS. J. SEABORN)	MINISTRY OF ENVIRONMENT
MR. R. TUER, Q.C.) MR. R. COSMAN) MS. E. CRONK) MR. P.R. CASSIDY)	ONTARIO FOREST INDUSTRY ASSOCIATION and ONTARIO LUMBER MANUFACTURERS' ASSOCIATION
MR. J. WILLIAMS, Q.C. MR. B.R. ARMSTRONG MR. G.L. FIRMAN	ONTARIO FEDERATION OF ANGLERS & HUNTERS
MR. D. HUNTER	NISHNAWBE-ASKI NATION and WINDIGO TRIBAL COUNCIL
MR. J.F. CASTRILLI) MS. M. SWENARCHUK) MR. R. LINDGREN)	FORESTS FOR TOMORROW
MR. P. SANFORD) MS. L. NICHOLLS) MR. D. WOOD)	KIMBERLY-CLARK OF CANADA LIMITED and SPRUCE FALLS POWER & PAPER COMPANY
MR. D. MacDONALD	ONTARIO FEDERATION OF LABOUR
MR. R. COTTON	BOISE CASCADE OF CANADA LTD.
MR. Y. GERVAIS) MR. R. BARNES)	ONTARIO TRAPPERS ASSOCIATION
MR. R. EDWARDS) MR. B. McKERCHER)	NORTHERN ONTARIO TOURIST OUTFITTERS ASSOCIATION
MR. L. GREENSPOON) MS. B. LLOYD)	NORTHWATCH

APPEARANCES: (Cont'd)

MR. J.W. ERICKSON, Q.C.) MR. B. BABCOCK)	RED LAKE-EAR FALLS JOINT MUNICIPAL COMMITTEE
MR. D. SCOTT) MR. J.S. TAYLOR)	NORTHWESTERN ONTARIO ASSOCIATED CHAMBERS OF COMMERCE
MR. J.W. HARBELL) MR. S.M. MAKUCH)	GREAT LAKES FOREST
MR. J. EBBS	ONTARIO PROFESSIONAL FORESTERS ASSOCIATION
MR. D. KING	VENTURE TOURISM ASSOCIATION OF ONTARIO
MR. D. COLBORNE	GRAND COUNCIL TREATY #3
MR. R. REILLY	ONTARIO METIS & ABORIGINAL ASSOCIATION
MR. H. GRAHAM	CANADIAN INSTITUTE OF FORESTRY (CENTRAL ONTARIO SECTION)
MR. G.J. KINLIN	DEPARTMENT OF JUSTICE
MR. S.J. STEPINAC	MINISTRY OF NORTHERN DEVELOPMENT & MINES
MR. M. COATES	ONTARIO FORESTRY ASSOCIATION
MR. P. ODORIZZI	BEARDMORE-LAKE NIPIGON WATCHDOG SOCIETY
MR. R.L. AXFORD	CANADIAN ASSOCIATION OF SINGLE INDUSTRY TOWNS
MR. M.O. EDWARDS	FORT FRANCES CHAMBER OF COMMERCE
MR. P.D. McCUTCHEON	GEORGE NIXON

APPEARANCES: (Cont'd)

MR. C. BRUNETTA	NORTHWESTERN ONTARIO TOURISM ASSOCIATION

I N D E X O F P R O C E E D I N G S

Witness:	Page No.
DAVID LOWELL EULER, PETER PHILLIP HYNARD, JOHN TRUMAN ALLIN, RICHARD BRUCE GREENWOOD, CAMERON D. CLARK, GORDON C. OLDFORD, Resumed	13033
Continued Direct Examination by Mr. Freidin	13033

I N D E X O F E X H I B I T S

Exhibit No.	Description	Page No.
438	Diagram depicting net present value.	13071
439	Hard copy of slide providing definitions for prevent, minimize, mitigate, remedy and enhance.	13104
440	Hard copy photographs of slides contained in presentation by Mr. Oldford.	13113
441A	Diagram depicting full-tree logging method.	13118
441B	Diagram depicting tree-length logging method.	13118
441C	Diagram depicting shortwood logging method.	13118

---Upon commencing at 9:20 a.m.

THE CHAIRMAN: Thank you, ladies and gentlemen. Please be seated.

Mr. Freidin, are you ready to proceed?

MR. FREIDIN: Yes, Mr. Chairman.

DAVID LOWELL EULER,
PETER PHILLIP HYNARD,
JOHN TRUMAN ALLIN,
RICHARD BRUCE GREENWOOD,
CAMERON D. CLARK,
GORDON C. OLDFORD, Resumed

CONTINUED DIRECT EXAMINATION BY MR. FREIDIN:

Q. Mr. Hynard, before we get into the next silvicultural harvest system that you were going to deal with, which I believe was the selection system, I would like to go back to the review -- the brief review of your experience that was referred to to support your qualification as an expert witness.

And my comments arise as a result of discussions I had with people after the session as to whether in fact there may be some misunderstanding.

I want to go back to the fifth area that I wished to qualify you in and that was in timber management planning including deer habitat management. And just so that we are straight and there is no misunderstanding, are you an expert in deer habitat management?

MR. HYNARD: A. No, I am not.

Q. What was intended then when you were qualified as being an expert in timber management planning including deer habitat management?

A. My expertise is in the area of timber management planning and the deer habitat management is in that context, therefore, it is in the accommodation of deer and deer habitat needs in planning for timber management operations.

Q. And is that expertise, qualified in that way, one based on experience?

A. Yes, it is.

Q. Thank you. Now, if we could move then to the selection system, Mr. Hynard, and I understand that for this section, as was the case yesterday, you have a number of slides.

A. That's right. Before I begin the slides I would like to briefly revisit uneven-aged management and some of its attributes, and the selection system is an uneven-aged system. It provides for the harvest of trees as they mature, the replacement of those harvested trees with regeneration and the tending of young trees all within the same stand and within the same time.

These integrated operations are called

selection cuts and they are repeated periodically. The length of that period is called the cutting cycle and at least in theory that can continue indefinitely. The way it works in practice, mature trees are designated for harvest by tree markers and, at the same time, immature trees may be designated for removal as a part of the tending element.

Following the cut those marked trees which were too small to be merchantable might be removed by an improvement cut, more of which is provided -- more information is provided in Panel 12 on that aspect of selection. Combined harvest and improvement is intended to provide the residual trees with good growing conditions, lots of room around those crop trees and, at the same time, open up the stand enough to allow the regeneration to develop on the forest floor.

At the end -- of course, what happens during that cutting cycle is those residual trees grow and they get larger, they fill those spaces between the trees and stocking once again climbs. When stocking levels -- when the stand density is once again high, the selection cut is repeated.

I said yesterday that the selection system was best suited to shade tolerant species. The

reason for that is that these trees are going to have to grow in the understorey, they are going to have to survive and develop at low light levels also to species which are relatively wind firm, and the reason for that is that following partial cutting the stand will be opened, those trees will be exposed to more wind and, if they are not of a wind firm species, some blowdown will occur.

They are also -- it is also necessary that they may be species that are capable of establishing on an unprepared seedbed. It is not practical to carry out seedbed preparation or regeneration measures in an existing stand already filled with some saplings and poles and mature trees and so on.

In Ontario, the selection system is used for the most part in the harvest of stands of tolerant hardwoods where hard maple is the predominant species. It is also used in stands of that type where there is a reasonable representation of ages and sizes already. It doesn't work well in a stand which is dominated by all old large trees, and it is also applied in stands which have reasonable quality.

If the purpose is to keep the residual stand growing well, then we want to have a

reasonable -- or a residual stand that has reasonable quality for the purposes intended; that is, the production of quality saw logs and veneer.

It is most commonly used -- it is the most commonly used silvicultural system in hard maple stands in southern Ontario, but it is rarely used in hard maple stands at the northern extremity of hardwood range. The simple reason for that is that -- well, in those northerly areas, maple retains many of its same silvical characteristics, its ability to produce quality material is much diminished.

Before I begin the slides there is two sketches that portray the selection system.

Q. Figure No. 11 is at page 116.

A. Figure 11 portrays the cut in the -- I am sorry, the stand in the pre-cut condition. We have a variety of tree sizes and ages and, in this case, quality which is a common situation.

Q. Figure No. 12 is at page 117 of the witness statement.

A. Figure 12 portrays what the stand would look like following a selection cut. Some of those trees have been removed but there remains a variety of tree ages and sizes, stocking is reduced so that the residual trees have more room to grow and some

openings are created.

Let's look at the real application of the system. As I mentioned, the trees are designated for harvest by tree markers. This stand is in Minden District.

Q. And remember to give the photograph number, Mr. Hynard.

A. Oh, yes. Excuse me, photo 3.1. If you look closely at photo 3.1 on the screen you will see that indeed there is a variety of tree sizes in the stand. A relatively large tree, smaller trees in the background, some mid-sized trees. We have a small pole here and we have hard maple advanced reproduction on the forest floor. All those little green seedlings that you see there are hard maple.

Of course it is necessary that there be a minimum of logging damage to those residual trees by the harvest. Mr. Oldford will be talking later about that. But, of course, the reason it is important is that we are leaving those trees to continue their growth and we don't want to see them damaged.

THE CHAIRMAN: Mr. Hynard, if you left the forest as is with all those seedlings on the ground as you showed in that last picture, would most of the seedlings end up surviving and growing into trees?

MR. HYNARD: You are referring back to photograph 3.1. You are referring to the seedlings right here on the forest floor?

THE CHAIRMAN: Yes.

MR. HYNARD: No, they would not develop. As long as there was a closed canopy above them they would not develop much beyond what you see there. Those trees may be anywhere from 1 to 12 or 15 years old. They can only stand suppression like that for so long. They are very tolerant, but that's pretty extreme conditions and they are constantly dying and being replaced.

The way maple likes to regenerate itself is to have the seed fall on a leaf litter and more leaves fall on the seeds and they germinate in the springtime before the leaves come out on the trees. In fact, they will sometimes germinate under the snow. The advantage there is that they have about a month of full sunlight before the full leaf comes on the canopy, one month in which to get established.

And they are very good at penetrating that leaf litter, in fact they are exceptional at it, and the seedling develops and it remains in the understorey until an opening occurs. That opening can occur as a result of windthrow, a tree upsetting, a

tree dying, it can be the result of a partial cut such as a selection cut, or it could be the result of a clearcut.

The second picture is 3.2 just showing a skidder drawing a hitch of tree-length material out of the bush.

Photograph 3.3 shows a stand in Minden District. It is the first in a series of two. It shows the stand as it was immediately following a selection harvest cut. This particular stand was cut in 1978-79 and it had received two previous cuts. The first cut was for scattered white pine at about the turn of the century, and I surmise that that is the case because of the white pine stumps that were there.

And I was kind of curious about it, I had an increment borer at the time, so I bored into trees that were beside the stump and extracted a core and examined the rings on a number of these trees and there was a pattern of release to several of the trees and from that I inferred that the white pine that had been cut down released them about the turn of the century.

The second cut was for yellow birch according to the stumps and I did the same thing and found that the cut had been made some time in the second world war.

I am not sure, of course, of the exact amount of removal. The white pine was certainly a light scattered cut, the yellow birch cut was patchy. That was the only evidence. Unlike Mr. Armson, I couldn't get the records from the turn of the century, so... But it is an interesting history to this particular stand. It was cut in 1978-79 down to 55 per cent of full stocking, a fairly heavy cut by selection standards.

This is photograph 3.5. It is the same stand, approximately the same location as the previous slide but it is six years later. You can see that there is considerable understorey development occurring, there is lots of maple development coming up in that stand.

Actually, in the pre-cut condition you can see that the stand is pretty shy in small trees. I mean, there is a tree there that would measure perhaps eight inches in diameter, there is one a little smaller. There is a sapling here. See, there are some younger and smaller trees, but relatively few because the stand has not been opened since the yellow birch cut in the second world war. Six years following the selection cut that understorey is now showing up quite stronger.

I am sorry that was a series of three. This is the same stand, photograph 3.6, viewed from the air. And this particular picture was taken eight years following the selection cutting. If you look closely you can see that there are gaps in the canopy. In fact, it is all throughout that stand, the stand boundary runs about like this (indicating) and when you look at it you can see those gaps between the crowns.

Once those crowns have closed in again, understorey development will be suffering, the trees will be competing with each other, stocking levels will be high and a return selection cut will be made.

Another similar stand, another uneven-aged hard maple stand. First in a series of two photographs, this one is 3.7. This stand was cut to 62 per cent of full stocking. It has got quite a bit better representation of sizes in it from relatively large to -- well, mid-sized, relatively small and saplings.

The next photograph 3.8 shows the same stand at approximately the same location, as close as I could get, five years following cutting. This tree would measure perhaps 17 or 18 inches in diameter. I am sorry, Minden is a sleepy little backwater and we are still on Imperial, at least I still am. Here is a

nice sapling perhaps three inches in diameter and lots of regeneration.

This is photograph 3.9, another uneven-aged maple stand, another fresh selection cut. This one once again down to 50 per cent of full stocking. 50 per cent, taking out half a stand in a selection cut is heavy by selection standards. The cut was made to that intensity in an effort to remove defective trees which had poor timber production capabilities.

In these selection stands at that kind of stocking level we have room for more trees and if we had more high quality trees we would want to keep them. In an effort to provide for wildlife in our cut-overs, we have been identifying mast-producing trees, den trees, any kind of a tree with a stick nest in it and our people -- our tree markers -- in fact, I am not even sure experts could separate ravens' nests from raptors, so if it has got a stick nest in it we leave it.

And there is room for those trees in those stands because they have been cut to such low stocking levels. In this case, you can see a road extending throughout the cut and that is a tertiary logging road. It would have been used by the log

trucks coming out, very low standard road, temporary road, it is in fact a winter road, and it was seeded after the cut with clover, fescue and tree foil for wildlife purposes,

MR. FREIDIN: Q. You used a term when you were speaking about that removal, you used the term mast-tree,

MR. HYNARD: A. Oh yes.

Q. What is that?

A. A mast tree is a tree that produces a nut. Oak produce acorns, beech produce beechnuts and those nuts are edible by wildlife, particularly deer -- well, I think anything will eat an acorn; won't it, Dave?

DR. EULER: A. Lots of them. Turkey, grouse, mice.

MR. HYNARD: A. And this is an aerial view of the same stand as the previous photograph, this one is photo 3.9. It is taken one year following the cut and you can see those gaps very clearly in the forest canopy here.

THE CHAIRMAN: Is that not 3.10?

MR. HYNARD: I am sorry, you are right. Thank you. You can see that the gaps in the crown is quite evident here. Let me see if I can pick out a

beech. I don't see one. That's a red maple here.

And that's the end of the series on selection cutting.

MR. FREIDIN: Q. I understand that the last portion of your topic is going to be the factors which in fact -- the factors which are considered when you are trying to choose which silvicultural harvest system you are going to adopt?

MR. HYNARD: A. That's right. At this point we have covered all the - Ron, you can leave the light off, I am going to put an overhead on in just a moment - do you have enough light to write there?

At this point we have covered all of the silvicultural systems and their variations as they occur in Ontario and both on the ground and from the air, and now I would like to just spend time discussing the factors that are important in choosing the harvest system.

THE CHAIRMAN: Is this reproduced anywhere, Mr. Freidin?

MR. FREIDIN: I don't believe so.

MR. HYNARD: Yes, it is. It is contained in -- pass me a green book, I will find the page number.

MR. FREIDIN: Page 375.

MR. HYNARD: Thank you. It is the forester who is responsible for the management of the unit who prescribes the silvicultural harvest systems that will be employed. Those prescriptions, like all other silvicultural prescriptions, are contained in the silvicultural ground rules of the timber management plan.

That forester who is responsible for the management of the unit and is the author of those silvicultural ground rules may be an MNR forester -- an MNR unit forester in the case of a Crown unit, or he may be a company forester in the case of an FMA.

I have heard the question: What happens if a company forester or indeed a Crown forester prepares a set of harvest prescriptions which are unacceptable to the Crown. In that case, both the Crown Timber Act and the Forest Management Agreements themselves state that the Minister may approve a management plan or he may approve it with such alterations as he considers proper. So the Crown has the ultimate control in the selection of the silvicultural harvest system.

There are the five considerations though that the forester -- unit forester - and I include the company foresters in the same category - use in

selecting that -- in making that choice. The first one being silvical characteristics; the second one, terrain site and stand conditions; regeneration method; past results; and economics. And I will cover them one by one.

Before I do, though, I should point out: What is the role of the silvicultural guides in the choice of the harvest system. It is a source of information, data and references. It forms the starting point for the development of silvicultural ground rules and the guide -- silvicultural guide is intended to be interpreted and adapted to local conditions. They are intended to be applied in a thoughtful, discretionary manner.

The first of the five factors is silvical characteristics of the species being managed and those of the associated vegetation. Silvics is the science of the biological characteristics and their life history and ecology of forest trees growing in stands. So silvics is a science, it includes biological characteristics, life history, it is of forest trees that are occurring in stands. Silvical characteristics of the species being managed is paramount in the choice of the silvicultural harvest system.

And I am going to run through some of

those silvical characteristics, and I think maybe one way to do that would be to refer to Appendix 1, Table 1 of the Panel 10 statement of evidence on page 120. For those at the back of the room who don't have the Panel 10 statement of evidence, I will put that table on the screen but, I aplogize, I don't think you will be able to see much back there.

The first -- maybe I should explain first how Table 1 is arranged. It is meant to represent very generalized silvical characteristics on very broad site types. It is meant to give you a general impression of the characteristics. It is by no means a compendium of all the characteristics nor all the site types.

Q. Why was it prepared?

A. I prepared it to demonstrate as a part of my evidence how those factors affect choice of method.

The table that you have before you is arranged with the characteristics across the top in a row. It mentions the principal range, shade tolerance, seed production, wind firmness and other characteristics, and those are described in the section below.

It is broken into three common broad site types. For black spruce, those site types are defined

as lowland sites, deep, poorly drained organic soils; upland sites, deep imperfectly to well-drained mineral soils; and upland sites, shallow mineral soils, drainage controlled by bedrock. Those are three common very, very broad site types and you will notice that the characteristics on the left side of the page vary in many cases with those site types.

The associates -- the species that it associates with varies, natural stand origin, the usual national stand origin may vary, the seedbed preferred varies, vegetative reproduction does, as does relative and competitive ability.

The first one, shade tolerance, describes the ability of trees to survive at low light levels such as exists under a stand's canopy. Shade tolerance does not imply that the tree is shade demanding, merely that the tree will tolerate shade. Even shade tolerant trees grow faster in full sunlight than they do in the shade. Our table says that black spruce is tolerant and it is somewhat tolerant, it is certainly much more tolerant than jack pine, but it is also definitely much less tolerant than balsam fir, two of its common associates.

On a deep, poorly drained nutrient poor organic soil, which is that first category of site

types, black spruce is the most tolerant of its associates and it often forms monocultures on this site type in nature. It will reproduce itself to some degree without disturbance and the successional trend would be towards a continual predominance of black spruce.

On upland sites, the second category, this is not true; balsam fir is the most tolerant of its associates, balsam fir will reproduce itself in abundance on the floor and successional trends are towards balsam fir.

The second category that I will describe in silvical characteristics is the ability to reproduce from seed. This describes the species capacity to reproduce from seed and includes such factors as flowering, rooting characteristics, production levels, periodicity of seed crops, germination levels, seed pests. All of these factors affect the ability of the tree to reproduce from seed.

According to our table, black spruce is a prolific seeder with seed crops about every four years. The table could have added, as you have already heard in evidence, that the cones are semi-serotinous; that is, some seed is released and some seed is released each year when the temperature conditions are right

giving a more continual release of black spruce seed than you would otherwise expect from a periodic seed producer.

Vegetative reproduction is another silvical characteristic. Many trees will produce sprouts from the stump, the root collar or the root. Our table says that black spruce will reproduce vegetatively from layerings on two of those broad site types. Layerings are trees which originate from a lower branch which is in contact with moist soil in which the branch stem roots itself and the branch tip then turns upward to produce a normal tree.

Growth in yield is another silvical characteristic. Some species are inherently fast growers and some slow. The relative ability of a species to produce high yield, high value products to satisfy a market demand is a very important factor in the choice of a species being grown and, hence, the harvest system. Our table says that black spruce enjoys strong market demand.

Competitive ability is another silvical characteristic. This is a relative rating of the tree's capacity to make a fast start and outgrow its competition. Our table says that black spruce is a strong competitor relative to its associates on only

one of those three broad site types.

Wind firmness. We have discussed wind firmness already. According to our table, black spruce on poorly drained sites -- well, sorry, according to our table it says that black spruce is a shallow --

Q. All right.

A. -- is a shallow-rooted --

Q. I am just wondering if you could slow down and perhaps just direct us to the column that you are referring to.

A. Yes, I am sorry. The column I am referring to is the fourth one from the left entitled Degree of Wind Firmness. It reads:

> "Black spruce is a shallow rooted tree and is generally very susceptible to windthrow following partial cutting or strip cutting. Mature stands which are relatively pure and fully stocked are especially susceptible."

Leaving silvical characteristics, the second category was terrain, site and stand condition.

While the silvical characteristics of the species that are being grown set the stage for the silvicultural harvest system, that choice may be strongly influenced by terrain, site and stand

conditions.

For example, especially steep, rugged or broken terrain can prevent (sic) obstacles, major obstacles to harvest operations, indeed to the point where some harvest methods become totally impractical. Such adverse terrain conditions can affect the practicability of any of the harvest systems that rely upon rigid laid out logs. Adverse site conditions can include such things as boulder content and rock.

Where, for example, boulders effectively prevent site preparation for planting, it may be necessary to substitute a harvest system which will produce natural regeneration rather than rely upon artificial regeneration. Such a case exists in my own unit on the very shallow, very rocky ground with white pine where artificial methods are impractical and reliance is of necessity on natural regeneration.

Q. When you make that kind of decision because of that kind of a site type, is that considered part of normal practice?

A. Yes, it is normal practice. The size and condition of the stand can affect the choice, too. Very small stands, hilltop stands can -- certainly don't lend themselves to rigid laid out harvest systems, they are simply too small to accept the

configuration.

The condition of the stand too would determine to some degree, to a large degree in some cases, the choice of a system. For example, I made the statement that black spruce stands at very high stocking levels on lowland sites are very susceptible to windthrow. That might affect the choice of a system in that case.

The regeneration method that is going to be used, this is a kind of a Catch-22. Oftentimes the harvest system is set to accommodate the regeneration method which means you are deciding the regeneration method before you decide the silvicultural system. That often happens and it simply points out the inter-relationship of these two activities.

For example, in the case of white pine, if you are relying upon natural regeneration, you need a harvest system that will provide both a seed source and some protection from dessication, uniform shelterwood is a good choice. If, on the other hand, you are able -- the site is different and you are able to practice artificial methods, planted trees make a much better start under open conditions than they do in an understorey.

Q. In that case, you would contemplate a

clearcut?

A. Yes, you could contemplate a clearcut in that case. Past results is important, too. The application of silvicultural harvest systems is not new to Ontario. While their wide-spread use dates back to the 1960s, much older examples exist also.

For example, strip shelterwood cuts were once used in southern Ontario to regenerate hard maple. The results showed that the success of hard maple regeneration depended on the degree of advanced reproduction, advanced growth and not on the cutting system. Since that time strip shelterwood has been, I believe, abandoned in that area for hard maple. While it produced results, it was less efficient than other methods.

The last factor is economic considerations.

MR. FREIDIN: Mr. Chairman, perhaps before Mr. Hynard gets into economic considerations, as a result of the questioning yesterday involving the qualifications of Mr. Hynard regarding financial analysis, that particular subject of financial analysis is part of the subject matter that he was going to address under this title of Economic Considerations.

It was not intended originally that he do

that in any detail; however, having regard to the comments yesterday and having regard to your indication some time ago that because of the inter-relationships the cross-examination may in fact spill over into other areas, I would ask the Board's permission to perhaps go into a discussion of economic considerations a little bit more than what is in the witness statement.

And what I am proposing is to ask Mr. Hynard to, in fact, address and perhaps outline to the Board what the scope -- firstly, what limitations there are in terms of the scope to which the statement financial analysis applies to making silvicultural decisions. I think the Board should have an appreciation of what is involved in that because there may be questions arising during cross-examination which deal with that.

I am not inviting extensive cross-examination on this matter at this time. I believe that Mr. Hynard was going to deal with that subject in Panel No. 12, which is tending, and so when he was going to provide this explanation of how financial analysis can in fact come into play, it would be after the Board would have heard the evidence and have a fuller understanding of the activities of harvest, renewal and tending which are considered in

that.

But notwithstanding that he was going to leave that matter until 12, I think it might be useful to in fact have that explanation - it is not going to be a lengthy one, but to have it at this time - and perhaps we could, as we go along through the cross-examination on a sort of case-by-case or question-by-question basis, determine whether that is a matter that would better be left until 12 so the Board would have heard the evidence about the three activities.

THE CHAIRMAN: Okay. I assume, Mr. Freidin, that Mr. Hynard is not going to get into the economics of the industry in terms of markets and, you know, how much is shipped to the U.S. and all this kind of thing, but solely deal with it on the basis of the economics related to the type of harvesting system.

MR. FREIDIN: He is not intending to get into that, and I think that given the opportunity to explain what he meant or what it means when he says that he is an expert in terms of financial analysis of silviculture investments, that it will become clear or clearer what is included within that term - that is what I meant about scope - and what isn't.

I think that is one of the reasons why I

think it might be helpful right now to sort of, let's find out what are the parameters of this thing called financial analysis.

THE CHAIRMAN: Well, we do not have any objections to going into it now provided that we are not going to be repeating it again in 12.

MR. FREIDIN: No intention. If anything happens in 12, it would be an expansion on or some additional material, no intention to repeat any evidence anywhere.

THE CHAIRMAN: We have every confidence in your last statement, but we will be the ultimate determiners as to whether you succeeded in 12.

MR. FREIDIN: Fine. I am willing to live by your judgment, Mr. Chairman.

MS. SWENARCHUK: Mr. Chairman, I am having a little difficulty with this because in our view it would leave an enormous gap in the discussion of harvest and silvicultural systems to wait until Panel 12 to talk about the economics of it all.

I assumed that Mr. Hynard would deal to some extent with the economics and there is material in the witness statement to that effect, if not socio-economic effects.

I am not happy with the idea that we

can't get into the full economic discussion of that here. I realize he has filed a paper in a later panel, but I do think the Board might be at some disadvantage in appreciating this evidence if there isn't some kind of substantial discussion of the economics involved now.

Now, I am obviously not telling Mr. Freidin how to run his case, but I think there might inevitably be some repetition. I don't think we can leave this whole discussion until Panel 12 or 13.

MR. FREIDIN: Well, I say -- I just repeat what I have said, I think Mr. Hynard -- it would be useful that he be allowed to deal with the matter. If Ms. Swenarchuk feels that she wants more information and she wants to cross-examine on that topic, I think let's deal with that when it arises on a sort of ad hoc or question-by-question basis.

THE CHAIRMAN: But if she wishes to cross-examine in more detail on the economic side, is she going to be met with the objection from you that we will have to wait until 12--

MR. FREIDIN: Well, as --

THE CHAIRMAN: --when he presents his full information on the economics of it and, therefore, she is precluded at this stage from cross-examining?

MR. FREIDIN: I can't --

THE CHAIRMAN: I mean, I think that is part of your problem; isn't it?

MS. SWENARCHUK: It is and here's another element of the problem. This is, after all, an environmental assessment and socio-economic conditions are amongst the environmental conditions being considered here.

The way in which economic conditions are dealt with in the timber management planning process is an issue throughout the hearing. Certainly it is an issue with regard to harvest both from the perspective of the unit forester who is -- and the industry and the Ministry who are conducting harvesting and from the perspective of the public who are looking at all the economic conditions involved.

And I do intend to ask questions in this panel on the issue of economic analysis as it pertains to this hearing which is an environmental assessment, and I don't believe it would be appropriate to wait until 12 or 13 for that.

MR. FREIDIN: Well, I don't think -- first of all, I can't give a categorical statement as to whether I am going to get up and have anything to say when the cross-examination occurs.

I think that the statement, you know, that Ms. Swenarchuk doesn't want to tell me how to put in the Ministry's case. I am not too sure - and that is sort of part of the fun of it I guess - I am not too sure exactly where she is going to go and what she means by terms, you know, as to the economic aspects of this, you know, and so I can't anticipate the scope that she puts on some of these words so, therefore, I can't really anticipate well the exact scope of her cross-examination.

So that is why I say --

THE CHAIRMAN: All right. Well, put it this way, Mr. Freidin: You are dealing with the same witness. This witness is going to, in Panel 12, present certain economic evidence or evidence on economic aspects that he was going to relate supposedly at that point to more than just the harvest activities; to the harvest, regeneration and tending activities, if I understood what you said, in 12.

He is prepared to give some of it now. Since it is the same witness, you might consider - and I am not saying this by way of directing you to do so - but you might consider having this witness present the economic evidence, if not today before you finish with this panel and then it would allow the parties in

opposition to cross-examine on that aspect when we are dealing with harvesting.

That wouldn't preclude them necessarily from cross-examining in terms of the economics of the situation when we get to renewal or tending in the other panels, but that evidence would be in.

MR. FREIDIN: All right. I hear you. I will take what you have said into consideration.

I think that there is going to be -- I think people are mixing up the financial analysis that Mr. Hynard is talking about - and you will only know what that is when you hear him - and considering the economics of timber management in the broader context. I think there is a difference and I think it may become apparent if Mr. Hynard proceeds.

I should, however, indicate that if cross-examination does occur in relation to the financial analysis element that Mr. Hynard is going to speak about and that cross-examination in this panel requires Mr. Hynard to in fact give his evidence that would be given in later panels - and I am not saying that I would be objecting to that - but I am just indicating that Mr. Hynard may have to spend considerable time dealing with those questions and--

THE CHAIRMAN: I know, that is the reason

why we are suggesting --

MR. FREIDIN: --that is why I made the comment to you and that is why I am going to consider them.

THE CHAIRMAN: We are suggesting now, if it is going to get into that, rather than stopping at that point and Mr. Hynard having to put some more evidence in direct or forcing the parties in opposition to have to wait until 12, we are suggesting that maybe you might want to consider - not today because he may have to review that evidence that is in 12 - to present it before you end the direct examination with this panel so that all the parties, when they go to cross-examine, can sort of deal with that topic at one time and not be forced to wait until a later panel.

Would that accommodate your concerns?

MS. SWENARCHUK: Can I just clear up one minor point first. My understanding is that Mr. Hynard's economic paper is in Panel 13 and not 12; is that correct? We are talking about the same thing?

MR. HYNARD: My impression is it is 12.

MS. SWENARCHUK: All right. I will deal with that.

It is not necessary to accommodate my concerns or Mr. Freidin to necessarily change the order

in which he intended to have his evidence produced. I merely want to underline that it is not possible, in my view, to draw a line between financial analysis and economic factors and the type of examination of those factors that is necessary in an environmental assessment. I think it would be more helpful if --

THE CHAIRMAN: No, but if it is not going to accommodate your concerns, Ms. Swenarchuk, then if you are met in cross-examination with the answer from Mr. Freidin - and I am just surmising that this may be the case - that: I am sorry, we can't deal with that now, we are going to have to wait until 12 because the evidence isn't on the record in a direct way, you are going to have to be content with that.

In other words, you may not be able to cross-examine to the extent that you want to of this panel now on the economic factors because some of it may be addressed in a later panel.

MS. SWENARCHUK: Yes. I think it would have been more helpful to all of us to have that other document in this panel as well. However, providing --

THE CHAIRMAN: Well, this is the only thing that we are suggesting to Mr. Freidin, to perhaps reconsider that aspect of it, come up with what you wish to do in terms of the economic aspects and then we

will deal with it at that point.

MR. FREIDIN: I think -- and I think the comment that the discussion we are having now just highlights the inter-related nature of all of these activities.

And as I said at the beginning, we have had to, for practical purposes, deal with them in some sort of an isolated fashion. The comments that you are making, as I say, we should have led all the evidence about access, harvest, renewal and maintenance before you had any cross-examination, but that would have been just untenable.

But having regard to that, I will take your comments into consideration, Mr. Chairman. And I assume that you are allowing Mr. Hynard, to the extent that he's prepared to at this time - and 15 - deal with or explain what he meant about financial analysis of silvicultural investments when I qualified him as an expert in financial analysis in the area of silvicultural practices, what that means.

THE CHAIRMAN: Very well.

MS. SEABORN: Mr. Chairman, just before Mr. Freidin proceeds. Not to muddy the waters any further on this issue, but in the Panel 10 witness statement and in Panel 11 there is also an economic --

there is an economic report to do with regeneration that is referred to in the Panel 10 witness statement that forms part of Panel 11 that, I believe, is a different witness speaking to it.

So I just want to be clear that there may be other witnesses other than Mr. Hynard that the parties would would want to ask questions to with respect to economic factors.

THE CHAIRMAN: Is it a witness in this panel?

MR. FREIDIN: Which witness are you referring to?

MS. SEABORN: Well, I am just looking at page 84 of the Panel 10 evidence and there is reference to the report on Natural Regeneration Efforts in Ontario.

MR. FREIDIN: That is where we are right now.

MS. SEABORN: It was our intention to deal with economic factors in terms of regeneration in Panel 11. I am not -- I can't recall at the moment who the witness is, but I just wanted to point that out.

MR. FREIDIN: Well, Mr. Hynard is going to be the witness in 11 and Mr. Hynard will be the witness --

MS. SEABORN: In 11?

MR. FREIDIN: Yes, and he will be there in 11 and he will be there in 12. So that doesn't change my submission, Mr. Chairman.

THE CHAIRMAN: All right. Why don't we proceed and let Mr. Hynard deal with this point 5 on page 75 to the extent that you want to at this point.

MR. HYNARD: And I will be sure not to repeat myself later.

THE CHAIRMAN: We will ride herd on that promise.

MR. HYNARD: Before I do begin, I would like to address the Board on a couple of questions raised by Ms. Swenarchuk yesterday about my qualifications in the field of financial analysis with respect to silvicultural practice and I would like to point out or reiterate, first of all, that I am not an economist, I have no economic or financial training beyond what I received at university.

MR. FREIDIN: Q. In forestry?

MR. HYNARD: A. That's correct. There are varying degrees and depth to expertise. My expertise is a very narrow one. It is confined to the application of financial analysis to silvicultural treatments.

With regard to depth of expertise, I would stress that I am a field forester, one who uses financial analysis to aid in decision-making. I am not a professional analyst and I am not engaged in that business.

My expertise stems from an investigation which I conducted for Mr. Armson in 1983 in investigating suitable applications of financial analysis methods for forestry practice in Ontario. That is field practice.

The result of that work is the paper which I wrote entitled: A Decision-Making Model for Foresters Using Economic Considerations. That report has been filed as Reference No. 1 to Panel No. 12. I have since taught some of those applications in workshops with government and industry foresters and on at least one occasion to university undergraduate students.

I would like to begin my talk about financial analysis with a point that is perhaps not as obvious as it seems. Silvicultural investments are investments in a true sense. They are expenditures made now with the expectation of a future gain that is made possible by real growth. I would like to just put a very simple formula on the flip chart.

That formula --

THE CHAIRMAN: Can everybody see the flip chart from there?

FROM THE FLOOR: If you can just put it this way a little.

MR. FREIDIN: Just turn the angle, angle it a bit more, Peter. That's probably good.

MR. HYNARD: Can you still see the flip chart?

THE CHAIRMAN: Yes.

MR. HYNARD: The value of any commodity can be calculated as a net value of that commodity as its value minus the costs incurred in its production.

This simple formula when applied to forestry has one difficulty, it doesn't take into account time. The costs may be incurred today, however the value will not be obtained until some point in the future. So if I can just adjust this simple formula slightly and call it net present value and change the formula slightly to discount those costs and those values to one common point, present.

And we do that simply by dividing by the one plus the interest rate - "I" in this case is the interest rate - to the exponent of the rotation age. And similarly, the costs in the same manner, except the

time - end - years will be the point in which those costs occurred. Would you like a number on this?

THE CHAIRMAN: Yes, Exhibit 438.

MR. MARTEL: Mr. Hynard, would you just repeat the one plus interest...

MR. HYNARD: Yes. If you've got an interest rate of 4 per cent, it would be 1.04, we would be dividing that value by 1.04.

However, if the rotation age -- if we are going to carry that interest rate for a rotation of perhaps 80 years, then it would be 1.04 to the 80th which you are dividing into that value. So what's happening here is that your value is being reduced to take into account that rotation -- I'm sorry, that interest that's accruing over time.

If your value is occurring at a very distant point, 80 years from now, the reduction will be considerable. If your costs are occurring now, there will be no reduction at all. It is zero if it is taking place right now, those costs are present.

And that technique known as net present value is simply taking those values and those costs together to one common point in time.

MR. FREIDIN: Perhaps we could title that exhibit just so it is on the record. We have a name

for it, net present value, Mr. Chairman.

---EXHIBIT NO. 438: Diagram depicting net present value.

MR. HYNARD: What about this concept of time.

THE CHAIRMAN: Mr. Hynard, just one moment. When you are using the numbers and you have got one plus the interest rate--

MR. HYNARD: Yes.

THE CHAIRMAN: --to the rotation age, why do you end up, when you use the figure 1.04 instead of not -- have you multiplied it instead of adding it?

MR. HYNARD: No, the 4 per cent interest rate is .04.

THE CHAIRMAN: Right

MR. HYNARD: So 1 plus .04 is 1.04.

THE CHAIRMAN: Oh, I see. Okay..

MR. HYNARD: And you would be taking that to the 80th power in that case.

THE CHAIRMAN: Thank you.

MR. HYNARD: What about taking time into account. Well, everyone knows that time is important and it is important -- its importance in a financial sense is represented by interest rates.

People will buy a home knowing that

through their mortgage they are going to pay for that house several times over and they are willing to do so because that time is important, they want to own that home now.

Well, it seems that nothing is simple anymore and that's just as true of silviculture. In fact, there isn't one simple point at which you expend your cost. Silvicultural treatments come in packages. For example, you may be doing site preparation this year, you may be purchasing nursery stock next year and planting it next year, you may be doing a tending treatment five years from now. So that the costs occur as a series, and using this net present value methodology, each one of those costs is discounted back to its present value.

Similarly, the value at harvest, if there are commercial thinnings to be made, the value of those thinnings will be occurring at different points in time. You will be seeing that in Panel 12. So you have got values appearing at different points in time followed by a final harvest and all of those values would similarly be discounted back to present.

Then, of course, there is the probability of occurrence. It is possible that you don't always carry out all of those treatments on that site type.

For example, perhaps a second tending will be necessary, perhaps it is necessary half of the time. That must be taken into account too.

And similarly, it is possible that some of your efforts will not achieve the desired results. Different silvicultural treatments on different site types have different success rates, and so the risk of failure or the risk of the need to retreat must be taken into account too.

So that this formula that you have before you gets expanded and expanded and expanded to take into account all of those various factors.

MR. MARTEL: Can I ask you a question, Mr. Hynard. How do you relate that to what - all of these costs in the formula and some of it is incurred by the company that's doing it, some of it is incurred by the state in terms of providing the trees- how do you put all of this together in a package to show who is paying what and who benefits how?

MR. HYNARD: That's a real good question. In fact, costs to whom, value to whom. Any time you are conducting an analysis you have to look at who your client is. So in those workshops that I referred to, we would be doing calculations, and the industry foresters are particularly interested in that, we

relate it to their interests.

In fact, at one of the workshops on which I instructed, company foresters wanted to look at financial analysis for managing privately owned forests on their own land. And they were looking at that and they must look at it from their point of view.

For example, in a case like that, if the Ministry of Natural Resources were to conduct tree marking for them at no charge to them, then that would not be a cost and MNR does that under its Private Land Forestry Program. But taxes would be --

MR. MARTEL: But does it show up somewhere? I mean, just using that as an example, does that show up in the ledger somewhere as to who that cost was charged to?

MR. HYNARD: Well, I would just like to say there is no ledger. We are not keeping an accounting book. We just have --

MR. MARTEL: I understand that, but just using the term.

MR. HYNARD: We have a forester -- and what is the purpose of all of this, where is it leading. We have a forester who is facing a decision, he has choices. I am sure I am not letting the cat out of the bag when I tell you that we don't have enough

money to do everything everywhere all at once. I mean, that's equally true of me in my home life and it's not surprising.

And so foresters have choices. He could be doing this treatment on this hectare, or he could be doing it on another hectare which is different in character, or he could be doing this treatment here or could be doing another treatment. What he wants to do is consider some of these factors that make investments productive in his decision.

And in fact when Mr. Armson approached me back in 1983, that was his concern, was that not only in taking those public dollars are we attempting to make land productive, but we are making investments and we should be considering the factors that make investments productive.

Now, that's a long preamble to my answer. Your question was: How does he separate whose costs and whose values. He is going to have to look at in a narrow sense. And so I look at the costs that I am incurring as a unit forester, it is what it is going to cost me to carry out that treatment. I don't pay for the nursery stock but my employer does, so that's in there too. Cost of nursery stock is in there.

The question of value, who gets the

value. In the case of a land owner, it is pretty straightforward. The land owner gets stumpage, that is what a willing buyer is prepared to pay him for the right to cut that timber. That's easy, we know what those figures are and we can help a landowner work out his analysis fairly readily.

In our case it is much more difficult. Private landowners do not invest in forestry to a large degree because the rate of return is simply too low. And the Government of Ontario, on the other hand, invests in forestry because the benefits to Ontario society from a cord of wood are enormous. Those benefits include people working in the mills, they are paying their taxes, they are not collecting unemployment insurance, they are buying their skidders that are made in Woodstock, they are buying their Chevrolets that are made in Oshawa. Those are all values that Ontario society -- people of Ontario receive as a result of the Government of Ontario making this investment.

Now, I said I am not an economist and I am not, I don't have the answer as to what that cord of wood is worth to society. I believe in Panel 5 evidence was given on that. Well, how is it used? It is used by unit foresters in considering those other

factors in making a decision.

What are the inherent results or the inherent weaknesses in this, how is it used. Well, if you are going to use it you have got to understand its weaknesses. One of the big weaknesses is what will the results really be. We can offer opinions, our best opinions, but only time will really tell after a full rotation what those results are going to be. Of course, we can't wait a full rotation to make a decision, we have to give our best view.

Of course there are other methodologies to figure out -- to help you figure out that question. You might ask the question backwards and say: How much productivity would I have to have on this site to justify the extra investment over another area.

And, Mr. Chairman, I am thinking of our example yesterday of the non -- so-called non-treatable stand from which 20 per cent had been removed in conifer and 80 per cent poplar remained. And, yes, it would be possible to cut all those trees down and drag them off the site and pile them up and allow them to rot. Tremendous cost of course.

We would have to work out whether it was -- and my answer to you was: Well, it might not be worthwhile. And that's how you would figure out

whether it indeed is worthwhile or not.

I guess the second inherent weakness, Mr. Martel you raised, value to whom, what is the value of that cord of wood. We know it is a large value, but we don't -- I don't know exactly what that value is. Of course it varies from cord to cord and that's important, too.

For example, when you buy your hardwood furniture I will bet you are paying $15,000 a cord for your wood and that $15,000 went into the economy. If you buy pallets -- hardwood pallets, that's about $500 a cord for your wood. And this simple fact explains two things: First of all, why hardwood foresters try to grow quality trees; because there is better economic value and that's part of our purpose of management. Of course the other thing it explains is why people don't burn their furniture.

I would say the biggest flaw inherent in using financial analysis would be the presumption that we are interested only in maximizing the revenues from growing and selling timber. That's not true. We are in an integrated business of providing for economic development based on our natural resources and on providing outdoor recreation and enjoyment to the people of Ontario, including those values for which

there is no price tag.

We do not take the view that non-economic or non-revenue generating activities have no value or even a lesser value.

Well, if that's how we use financial analysis in forestry, how don't we use it. First of all, we don't use it to justify non-treatment in areas that would have a low economic return. We are prepared to conduct treatments where there is a low economic return where there is a demand for that wood, and where we are fiscally able to do so. We don't use it to decide between competing land uses; for example, wilderness and logging, we believe there is a place for both.

And that's all I have to say on financial analysis.

MR. FREIDIN: Good time for a break, Mr. Chairman.

THE CHAIRMAN: Yes, I think we will take the morning break for 20 minutes. Thank you.

MR. HYNARD: This concludes my evidence on -- oh, you will have some questions for me, though, won't you?

MR. FREIDIN: I have a few questions.

MR. HYNARD: Oh darn, I was hoping...

THE CHAIRMAN: Nice try, Mr. Hynard.

---Recess taken at 10:40 a.m.

---Upon resuming at 11:08 a.m.

THE CHAIRMAN: Thank you. Be seated, please.

MR. FREIDIN: Q. Mr. Hynard, just a couple of questions arising out of your evidence regarding financial analysis of silvicultural investments.

Could you advise: Do all field foresters undertake financial analysis in the way you have described it? Do they use that in exactly the same way and to the same degree?

MR. HYNARD: A. Well, your question has two parts: In the same way and to the same degree.

Yes, those foresters who use financial analysis in their decision-making do use it in the same way. I should point out there are several other methodologies, I only described one, net present value. There are others, equivalent annuity which a few years ago we used to refer to as EA but we have stopped, and return on investment, and they have different places. But net present value is the one that's essentially used in Ontario and, yes, they would do it in the same way.

To the some same degree, no. The degree to which foresters pull out a pencil and get out their formula and their discount rates and buy financial calculators, it varies to a large degree. All foresters consider those factors that are important with respect to financial considerations and those are: Cost, results, risk, and time, but they don't all use the formula all the time.

And, in fact, just to give an example to the extent to which you can use it, we are marking a pine area for a pruning project and, of course, you can take a pine that is as limby as can be and make it into a great tree if you are prepared to saw away at it all day. The question is, at what point is a pine too limby to make it worthwhile to prune.

And I had nothing to do one day and sat on a log and timed these guys pruning their trees. Of course it is the same value whether you spend 20 minutes at the tree or three, you get the same end product. That is 20 minutes at a very limby tree and three minutes at a tree that only needs a touch up here and there.

And I finally set the time limit that it was no longer worthwhile and instructed the tree markers: You see that tree there, if you ever see one

that is that limby, don't mark it as a crop tree for pruning. I mean, that is carrying it to, which my colleagues call, the ridiculous.

But on the other hand I don't think I have done a calculation in the last two years because many of the decisions I face are repeating themselves. I now know how limby a white pine should be. I don't go out all the time, sit on a log with my calculator and I don't need to.

Q. Now --

THE CHAIRMAN: Just one moment. Going back to the idea that most foresters who make these kinds of decisions will use this type of financial analysis and to what degree they will depends on them and their own experience, are all foresters who would be in a position to use this type of financial analysis trained in the formula?

Are they specifically given a training course, or is it something that is automatically covered in forestry education in university so that at least they are in a position to use if they so want to?

MR. HYNARD: Mm-hmm. Well, they all receive that training in forestry school just like I did, but as the years go by you forget some of the stuff, especially if you don't use it.

Yes, the Ministry of Natural Resources is attempting to use these considerations, these economic considerations more and more and, in fact, it results in part from the action plan in response to the Baskerville Audit.

And in the Class EA Document which is Exhibit 4, in Appendix VII, Item No. 6 - I will read it to you - this is the summary of the MNR's action plan in response to Dean Baskerville's Audit of Management of the Crown Forests of Ontario. Item 6 reads:

> "A series of workshops are underway to train field foresters to use economic criteria in decisions on lands to be regenerated."

Mr. Armson in his evidence filed an Exhibit No. 58. On page 5 of that exhibit there is an expansion on that action. Item No. 6 reads, and I will read it out --

MR. FREIDIN: Q. Perhaps you could read the main heading under which No. 6 is found as well?

MR. HYNARD: A. Yes.

> "The need is to ensure that current silvicultural practices are contributing to the accomplishment of specified management targets and that the budget for silvicultural purposes (regeneration

and tending) is being spent in a manner that would give the best return on investment."

That action that followed, Item No. 6 on that page 5 reads:

"Management planning and, in particular, decisions as to the nature and location of silvicultural treatments require a knowledge of economic costs and anticipated benefits. While such decisions must be made by the management forester, there is a need to do this on the basis of consistent criteria and the use of an economic analysis methodology to establish priorities. In order to do this, the chief forest economists organized a series of workshop for both Ministry and industry foresters in northern and southern Ontario. These workshops were attended by 180 foresters and the methodology is readily available."

And it is on those workshops or some of those workshops that I acted as an instructor. So the answer is: Yes, Ministry foresters are being trained in these

methodologies for that purpose.

Q. And is the methodology referred to the methodology that you generally describe in your evidence?

A. Yes, it is.

Q. Now, just a few questions. One question arising from your evidence in relation to the silvicultural system of selection harvesting. And the selection system that you described where you could take up to 50 or 55 per cent of the stand and harvest it, is that different from selective cutting in a reserve; for instance, a reserve that may be put around a lake to protect fisheries objectives or water quality objectives?

A. Yes, it is different. I think it is worth a minute to differ between those two words because I am sure they are going to surface again.

Selection cutting is an uneven-aged silvicultural system, as I described to you this morning. Selective cutting or the way in which it is normally used by foresters refers to the removal of some trees in the stand on a selective basis. There is some reason for the selection of those trees.

In the case of a reserve with a selective cutting within it, it may be the removal of scattered

large trees throughout that area in order to gain some forest products from the reserve. That reserve may not be managed in the sense that we are describing management systems to you, it certainly is not necessarily being managed on a selection basis.

Selective removal of trees in that case means that some of the trees are being removed. The degree or the intensity of the cutting would depend on the purpose of the reserve and the prescription for that area of concern.

Q. Perhaps you could just explain an example of how the purpose of that concern -- of that reserve might influence the intensity of the selectivity that may actually occur within that stand?

A. All right. I am thinking. I guess I would take a case from close to home where if we were logging in proximity to a waterway. In Haliburton County our lakes are probably our number 1 resource and they are used intensively for recreation, boating and bathing and fishing and canoeing and a large number of them have cottages and the aesthetics is very, very important.

In that case, the purpose of the reserve would be to protect the aesthetics of that lake and the selective removal, if it took place, would be of a very

light intensity.

Q. And if the purpose of the reserve was to protect water quality or fisheries objectives, would the degree of intensity -- the selectivity be restricted in any way so that you wouldn't, by selecting certain species, actually impose negatively on the thing you are trying to protect with the reserve?

A. That might be true, but I would like to talk to my fisheries biologist and have a look at this waterway first.

Q. Okay. And we will be talking with the fisheries biologist later.

MRS. KOVEN: In that situation, you would obviously want to regenerate that area as well?

MR. HYNARD: You are referring to which area?

MRS. KOVEN: To selective cutting on a reserve.

MR. HYNARD: No, not necessarily. You might allow the residual stand to simply look after itself. If the cutting was very light, regeneration wouldn't occur, the stand would simply close in through those few holes that were created in that canopy. If the cutting was a little heavier, enough to give enough

light to the forest floor, then whatever advanced growth was on the forest floor would probably regenerate.

So that within reserves they may not necessarily be managed in the same intensive way and using the same silvicultural systems that I have described to you. Of course it doesn't mean that that is always true either. If it is possible to conduct a silvicultural system and manage intensively within that reserve, then that would be done.

A case there might be a hard maple stand which would be managed on a selection basis at any rate could be used in proximity to any number of features that have some sensitivity but would be adequately accommodated through normal selection cutting.

MR. FREIDIN: Q. Are there some reserves that might get established as a result of the area of concern planning process around a water body, again as an example, that you would basically not even go back for timber management purposes, that you basically establish the reserve, and even though you may select a few large saw logs out of it, after that you are not intending to manage that for timber management at all?

MR. HYNARD: A. Sorry, I was drifting off there. Reserves in which you would...?

Q. If you establish...

A. You were drifting off, too.

Q. Maybe the Chairman should help me like I helped him the other day.

A. Let me try and explain.

THE CHAIRMAN: I won't say that we have drifted off.

MR. HYNARD: There are all kinds of reserves established for different purposes. Some reserves -- some areas of concern may call for no cutting of any kind because it is simply incompatible with the purpose of the reserve.

Other reserves may -- let me think of an example right there. We looked at that slide of the poplar clearcut in Minden District from the air, it is not showing the cottage development along the lake. Certainly within that reserve we are not slipping in behind those cottages and sneaking a few more trees out. I mean, we just wanted to leave those people alone and they wanted to be left alone too.

In other cases where the value was not so great or the use is not so intensive, it may be possible to remove a few high value trees without affecting that other value.

MR. FREIDIN: Q. Okay, thank you. Mr.

Hynard, I would like to obtain your comments on a couple of issues which have arisen to this point in the hearings, it has come up a number of times in different panels, questions have been put to various witnesses and, as a practicing field forester, I would like to obtain your views on some of them.

Could you advise: In your opinion, Mr. Hynard -- or could you comment on the adequacy of the information that you have in order to make decisions, reasonable decisions regarding silviculture and other uses of the forest?

MR. HYNARD: A. Yes. Well, with respect to silviculture, I have an FRI inventory that catalogues the important characteristics of each and every stand in my unit. I have a very broad soils survey, it is very, very broad, it is not specific on a stand-by-stand basis, it describes the general soil conditions across the unit and maps where those generalized conditions exist. I have air photos and I know how to interpret the air photos.

Mr. Armson was talking -- was asked a question about air photointerpretation yesterday: How can you tell what kind of soil is there looking at an air photo that is taken from an altitude of 8,000 feet and the ground is covered with trees anyway. And the

answer to that one is that air photointerpretation is interpretation; it is not what you see, it is what you interpret.

And what you can see is the land forms, you can interpret from the land forms the method of soil deposition, you can see the tree cover - I think Mr. Armson did say that - and certainly I am able and foresters are able to infer from that tree cover the soil characteristics.

So I have air photos, I have a truck, I have a shovel, and all the other trappings that foresters have, equipment, I have staff, I have a budget that allow me to collect whatever data I need to collect to make a silvicultural decision.

That doesn't mean that I am always out there collecting data because every dollar that you spend collecting data is a dollar that you could have spent planting a tree. So it is necessary to collect some data and we collect that data where it is necessary.

With respect to the other uses, my office door is within 60 seconds I would think of the fisheries biologist, there is a wildlife management officer, there is a whole Lands and Parks Branch. They all sit on the planning team for my management plan and

they bring with them to that team all their files, all their files on deer yards, moose concentration areas, warm water lakes, cold water lakes, all the fisheries data - we have a lot of fisheries data - gravel reserves, other mineral potential, active mining claims, land use permits for other users of the forest such as hunt camp owners.

We know where the trails are that go into those hunt camps, the trails that those hunt camp owners get so upset if the logging disrupts. They have files on all the cottage associations, names and addresses and contacts.

Oh, it goes on and on. They bring those files with them.

Q. Okay.

A. And, in addition to that - and I should add that - that in the management planning process, if there is anything that is missed, we have a public participation in that management planning. We make a conscious effort to contact those other users to identify whatever it is that we might not have.

Q. In Panel No. -- well, I guess again through a number of panels, I guess most clearly in my mind Panel No. 7 there was evidence regarding the role or the importance that should be attributed to local

knowledge of the people on the unit or the forester on the unit and also what role does the fact that you live in a particular community play in terms of your ability again to make reasonable silvicultural decisions or decisions regarding other users of the forest?

A. Well, it plays a big role. It certainly makes my job very easy. I know my forests and their soils, I know the history -- treatment history and results. In fact, I have had the good fortune of watching my own treatments grow up over time, tremendous lesson to be learned. Of course, I live in the community, I deal with the cottagers' associations, I deal with the fish and game club, I deal with those hunt camp owners.

THE CHAIRMAN: How long have you particularly been in that unit?

MR. HYNARD: Oh, 15 and a half years.

THE CHAIRMAN: Is that unusual, to be in a unit that long?

MR. HYNARD: I think so. However, I was once a young green forester too and I was fresh on that unit 15 and a half years ago and my job, I guess it was harder then to do.

Experience does make it easy, but I had access to experience in other foresters in the

district, at the region. There are experienced people in the technology development units.

Our central library at Maple and at the Whitney Block gives you access to all the world's forestry libraries and a full library service. Those gals can help you track down anything and they not only do that, but they circulate each month all the new publications coming into that library. You just have to jot it out, send it down and that comes back. All of those things help.

I must have been slow on the job 15 and a half years ago, but I have looked at my treatment areas and I have few regrets. I don't think that every forester has to be there 15 and a half years to do a good job, in fact I am sure he doesn't.

MR. FREIDIN: Q. And just along that vein, although it may not be -- or it may be unusual for a forester to spend as long on a particular unit as you do, is it unusual that people that you rely upon in carrying out your job have been on the unit or in the district for a long time?

MR. HYNARD: A. Other people in my district?

Q. Well, like your land techs or your forest technicians, those kinds of people?

A. Yes, yes. There is often a great continuity of staff. To be perfectly honest about it, it is more so in the southern districts where it is more attractive to staff and less so in the remote communities. Staff turnover tends to be higher in those areas. But you know, staff come and they go but they never really disappear.

I can think of lots of unit foresters who later became supervisors and then regional foresters in the same region in which they were a unit forester and they are still using that experience.

Q. Okay. Another matter I would like you to comment on, Mr. Hynard, is about what I have described here as a rule book for silvicultural prescriptions. Now, when I use that term rule book for silvicultural prescriptions, what does it mean to you?

A. Well, a rule book in that case would be a set of written silvicultural prescriptions which would be implemented as written.

Q. Do you believe such a rule book is a good idea?

A. Well, if you were working in a vacuum and all the things that I have told you weren't so, it might be good idea. I mean, a rule book is certainly better than nothing. But given that the MNR -- given

the status of forest management in Ontario, I think a rule book is a bad idea.

Q. Why?

A. Well, I am sure that to follow a rule book would result in absolutely ludicrous happenings from time to time and I think the overall would be less than you could have with a thoughtful, caring forester managing the unit.

I know that for me my job satisfaction comes from the challenge of looking after that forest. I mean, I have got a vested interest, I have a sense of proprietorship over that. For someone to hand me a rule book and say: Follow it, I think I would find other work -- well, no doubt about it.

Q. Another matter that is sort of related is, and again I have this down about -- I have it down as providing rationale for silvicultural decisions. And could you comment on the proposition that the rationale for making silvicultural decisions should be documented every time you make one of these silvicultural prescriptions?

A. I think Mr. Armson commented really well on that yesterday, that if you were writing down rationale for every silvicultural -- for every decision you were making, you wouldn't be getting around to

making too many decisions, too many prescriptions.

I think it is, first of all, impractical to document everything that I have been talking about the last day and that is only one element of forestry practice. For me to document all of those aspects behind the decision-making would be cumbersome, it would be unweildy and it would be time consuming and it would take away from my ability to do my job. I think it is unnecessary.

I think to document that rationale would not provide a better product at all. I think that a requirement to do so would not recognize that the foresters practicing on those units are professionals.

Q. And, if I might, I would like to refer you --

A. And just another thing hit my mind there, Mr. Freidin, and that is that when I am talking about unit foresters, I am referring to foresters who are responsible for managing those units and that includes company foresters in that same category. No difference.

Q. In Exhibit No. 56, which is the Forest Resources of Ontario 1986, on page 17 there is a reference to production forest reserves. And I don't believe -- it is very short and I will read it to you,

Mr. Hynard. I will leave out the statistics.

A. Thank you.

Q. "Production forest reserves are those areas..."

I will read the whole thing.

"Production forest reserves are those areas representing 6.1 per cent or 2.4 million hectares of productive forest land which have significant silvicultural and forest management impediments. These may be extremely rocky soils, steep slopes, or shallow soils."

In relation to those types of sites specifically, would your evidence in relation to having a requirement to document the rationale for your decision-making in terms of silvicultural decisions be any different?

A. No, it wouldn't be any different. And I believe the figure you said was 6.1 per cent. On my unit it would be far higher, I have got really rocky ground. And it is a normal -- it is normal operating area, it is normal to have rocky ground, it is normal to set prescriptions, it is normal to go through exactly the same processes we have been talking about.

Q. And what does the phrase protection forest mean to you?

A. Protection forest means Site Class 4 according to Plonski's yield tables, which is the relationship of height over age. Site Class 4 refers to the site class for the predominant species or the working group that is growing presently on that site.

I have a lot of Site Class 4 poplar. If those areas were growing pine, which is more adapted to the shallow soils, it might be a Site Class 2. Site Class 4 -- I am sorry, protection forest means to me Site Class 4.

Q. And in relation to those areas which are protection forest, would your evidence be any different in relation to your views about documenting the rationale for your silvicultural decisions?

A. You mean operating on an area of protection forest?

Q. That is correct.

A. Well, very few operations occur on protection forests simply because the land is generally unfit for commercial timber production, but occasionally they do; they can occur there for several reasons. One is that perhaps the inventory is in error; secondly, maybe the site is -- and the demand for the products on that site is a little better than elsewhere, or it may simply be to remove some of those

species that are on that site that are in fact of Site Class 3 or better.

But in answering your question, no, my answer would not be any different.

Q. Thank you.

MR. FREIDIN: Mr. Chairman, that concludes my examination of Mr. Hynard.

MR. HYNARD: I am always thinking of these things a little late, I hope this isn't too late.

MR. FREIDIN: Q. No, I probably should have this standard question: Is there anything else you would like to say, Mr. Witness. So why don't we start.

MR. HYNARD: A. We were talking about documenting the rationale for a silvicultural decision and rule books and, of course, there is a corollary to that; what about simply having a rule book and allowing deviation from the rule book where you were going to document the rationale in that case. And my answer would be no different there either.

THE CHAIRMAN: Meaning what?

MR. HYNARD: That it would be unnecessary to document a rationale for deviating from a set of guidelines.

THE CHAIRMAN: Okay. So if I understand

your evidence correctly, you don't really think a rule book is necessary and, in some cases, it could lead to bad decisions because it wouldn't cover specific circumstances for which the rules shouldn't be applied?

MR. HYNARD: Exactly.

THE CHAIRMAN: In any event, you don't feel it is necessary to document the rationale and would prefer to rely upon the forester's professionalism in making those decisions; and, thirdly, if there was a rule book which allowed for deviation from the rule book -- from the rules with documentation when deviation occurs, your answer wouldn't be any different; you still would rely upon the professionalism of the forester and wouldn't find it necessary to document the rationale?

MR. HYNARD: That is my evidence.

THE CHAIRMAN: Thank you.

MRS. KOVEN: Do your comments apply --

MR. MARTEL: Don't you have to -- pardon me, go ahead.

MRS. KOVEN: And your comments apply only to the silvicultural guidelines, obviously you are not debating the documentation of rationale in a timber management plan, for example?

MR. HYNARD: No, that's right. I am

talking about the rationale for silvicultural ground rules in normal operating areas.

MR. FREIDIN: Q. And the silvicultural ground rules are a product, if I can use that word, which gets documented in the timber management plan? You have silvicultural ground rules in your...

MR. HYNARD: A. That's right, they are there but a rationale is not provided. I am writing a timber management plan now and, believe me, there is enough paper work involved.

MR. MARTEL: Don't you have to -- if you are going to deviate, do you not have to get permission in the plan from the regional director to deviate from the plan?

MR. HYNARD: I think you might be confusing deviation -- providing rationale in areas of concern from those in normal operating areas. In normal operating areas there is no necessity to document the rationale; in the case of areas of concern, there is a documentation of the alternatives that are -- the options that are there and the choice and the reason for the choice.

MR. FREIDIN: We will be addressing your question directly, Mr. Martel, I believe through two of the other witnesses specifically.

MR. MARTEL: Yes. I am just going back in my memory,, some reference was made some time ago.

MR. FREIDIN: There was reference in the moose guidelines.

MR. MARTEL: Yes.

MR. FREIDIN: And when I deal with Dr. Euler we will deal with that particular provision of the moose guidelines which does in fact refer to the regional director. So we are going to meet that issue head on.

MR. MARTEL: Fine, thank you.

MR. FREIDIN: Now, Mr. Chairman, the next witness is Mr. Oldford who is down at the right end of the table. He has asked me that he wants to kick Mr. Hynard out of his chair or change locations so he can get to the slide projector, et cetera more -- yes.

THE CHAIRMAN: Okay. I think it is the Board's intention to start with Mr. Oldford now and go until about 12:30 and then we will break until two o'clock.

MR. FREIDIN: Okay. Is it going to take you any time to move around there. You don't have to move anything?

MR. OLDFORD: No, just switch chairs.

MR. FREIDIN: Okay. Perhaps I should

indicate, once those particular places are changed, I do want to go back to Mr. Clark and ask him about that prevention, minimizing, mitigation, remedy comment that I made in my opening remarks.

And perhaps I could take - go ahead Peter - take some time and I will hand out some copies of an overhead that is going to be used by Mr. Hynard and I think it should be marked as an exhibit -- by Mr. Clark, I am sorry.

THE CHAIRMAN: This will be Exhibit 439. What do you call this overhead, Mr. Freidin?

MR. FREIDIN: Why don't we just say definitions of prevent, minimize, mitigate, remedy and enhance.

---EXHIBIT NO. 439: Hard copy of slide providing definitions for prevent, minimize, mitigate, remedy and enhance.

MR. FREIDIN: Q. Mr. Clark, perhaps you should put up the overhead. Mr. Clark, could you perhaps proceed then and indicate to the Board how the witnesses for the proponent are going to be using the words which have been used to describe the exhibit?

MR. CLARK: A. Yes, I will and I am going to make reference to some of my own notes here because in preparing our evidence I think it is fair to say that we had some difficulty dealing with these

terms in arriving at consensus on just what they meant, and so we put our minds together and, in an effort to make that clear, I may have to make specific reference to some notes here.

The first term, prevent. And in talking about prevention what we mean is that effects do not occur because they are avoided or dealt with before operations are carried out - avoided or dealt with before operations are carried out. In that context, we normally address prevention in the planning or design of operations. So we deal with it before operations.

Now, an example of a preventive measure would be a requirement that scheduled harvest operations in winter in order to avoid rutting.

MR. FREIDIN: And Mr. Greenwood will be addressing that specific technical topic, Mr. Chairman.

MR. CLARK: The next term is minimize. In this case, effects will occur -- I stress, will occur, but the aim is to make them as small as possible during operations - effects will occur, but the aim is to make them as small as possible during operations. Minimization of effects is addressed in planning or design and in the implementation of operations.

Now, an example of an action that would be aimed at -- yes, an action that would be aimed at

minimizing an effect would be, for example, in putting a time of day restriction in place, for example on harvesting operations in the vicinity of a tourist operation. I think as Panel 10 goes on you will see numerous examples of the way we respond to these terms.

The next term is to mitigate. In this term we assume that effects do occur -- effects do occur and additional actions are taken after operations - additional actions are taken after operations to alleviate, lessen, or reduce the severity of an effect. Effects do occur, additional actions are taken after operations to alleviate, lessen or reduce the severity of an effect.

And in this context we address mitigation in the planning and implement the additional action; that is the mitigation measure, after implementation of operations. I will just repeat that. We address in planning and we implement the addition action; that is the mitigation measure, after implementation of operations.

An example of a mitigative measure -- I will give you a couple here. One would be road gating after a harvesting or silvicultural operation has been completed, in effect road closure, or stabilizing slopes through seeding.

THE CHAIRMAN: But, Mr. Clark, in that example you can only introduce the mitigative measure and implement it after the effect has occurred?

MR. CLARK: That's correct.

THE CHAIRMAN: Not just after the operation which may give rise to the effect, you have to actually wait until there is the effect, or do you?

MR. CLARK: Well, no, actually when I think about it and I think of that last one, states slope stabilization, you would assume or you might be concerned that the effect would occur and so you would take action immediately after the operation to stabilize it.

MR. FREIDIN: Mr. Chairman, I think we are getting into the difficulty I indicated at the outset - I think it was the very first point I made - distinguishing between effects and potential effects. If in fact a potential effect - and I believe it is important to hear this and I hope you don't think it improper that I interject, but this is important and I want to be precise about that distinction.

I think in the example Mr. Clark gave, you know that a potential effect of leaving the road open would be A, B or C; that doesn't mean that you are not going to put the road there. Perhaps you put the

road there and you know that after the road is there you are going to avoid or mitigate that potential effect by gating it.

THE CHAIRMAN: That is after the effect has occurred; right?

MR. FREIDIN: No, you are mitigating a potential effect after the operations. An example given: The road is put in, the road is used during planning. You assume, based on knowledge and information, that there is the potential effect as a result of people using that road at certain times.

In order to deal with that after that road is put in, you put in -- you gate the road in order to alleviate or lessen the potential effect.

THE CHAIRMAN: Okay.

MR. CLARK: We have had many discussions about this, as I am sure you can imagine.

The next one is remedy. In this particular case, effects do occur and additional actions are taken after operations to rectify or correct or, if you want, to make right. So effects do occur, additional actions are taken after operations to rectify or correct and remedial actions are addressed in planning and the implementation of additional action, that is the remedial measure, after the

implementation of operations.

An example of remedial actions, for example - and I think you will see examples of this probably in later evidence - would be spawning bed rehabilitation where erosion and sedimentation was thought to have had a detrimental effect on a spawning bed.

The last one is enhance, and what we are simply saying: As a result of operations there may be positive consequences for other values - there may be positive consequences for other values.

Enhancement is addressed in the planning and design and implementaiton of operations. And an example of enhancement would be the provision of moose habitat through the application of Timber Management Guidelines for the Provision of Moose Habitat in the timber management planning process.

THE CHAIRMAN: Do you not have enhancement with respect to the timber aspect of it, or does it have to be another value. Can it not be enhancement of timber values as well?

MR. CLARK: Yes, it can.

MR. FREIDIN: Mr. Chairman, I indicated that -- or Mr. Clark indicated that this is a matter which we have had some difficulty with. I may want to

look at this and make a few additional comments after the lunch break if I think that anything which has been said might have been taken in the wrong way, all right. I just think it is important and I would like to just reserve my right to do that.

THE CHAIRMAN: Is it understood basically, Mr. Freidin, that henceforth all witnesses for the Ministry will be more or less referring in their evidence, when using these terms, to these definitions?

MR. FREIDIN: They will attempt to do so. You will recall during the cross-examination by Mr. Armstrong, Mr. Scott was saying: No, it is not mitigation it is minimizing. And that, you know, legitimately caused some problem and perhaps some confusion in the mind of Mr. Armstrong.

That's why we want to set this out and hopefully parties will not have difficulty with these terms.

And I think if either the witness feels that the word is being used - and I think that the mitigate/minimize is where you probably have the most chance for a difference or a misunderstanding - that hopefully the witnesses -- I have asked them to sort of keep their ears open in relation to that and perhaps if

counsel can adopt these and try to use them consistently, I guess that would make everything better and we will try to pick up where in fact it is used improperly as we go.

THE CHAIRMAN: Very well.

MR. FREIDIN: Q. Now, Mr. Oldford, your evidence today is going to be in relation to logging methods. I am wondering whether you could begin, please, by indicating to the Board how you intend to address the topic of logging methods in your presentation?

MR. OLDFORD: A. Yes, Mr. Freidin. Mr. Chairman, it is a pleasure and indeed a challenge to give evidence at this hearing, especially challenging to have to follow Mr. Hynard who is so extremely articulate in his review of silvicultural harvest methods.

The purpose of my evidence today, sir, is to introduce the Board to logging methods employed in Ontario, to show the complexity in these logging methods and to emphasize that the three logging methods can be adapted to the very many different forest conditions that exist in Ontario. To accomplish this, sir, my approach will be to review the three methods.

A little later on in the presentation I

will review a series of slides, and after we have had some discussion on this subject we have an action-packed video that will give you a first-hand experience at seeing a lot of machines operate that many people do not get the opportunity to see.

THE CHAIRMAN: I hope you are considering providing popcorn as one of your predecessors did for the last video.

MR. OLDFORD: Well, sir, I hope that the people that are going to make those arrangements will take that into consideration.

MS. BLASTORAH: We will see to that, Mr. Chairman.

MR. FREIDIN: Mr. Chairman, before we start, perhaps we could file the hard copies -- or pardon me, the photographs which are made from the slides that you are going to see during Mr. Oldford's presentation.

These are the actual photographs of the ones obviously which appear in the witness statement, Exhibit 416A and those start at page 174 of the witness statement.

THE CHAIRMAN: Shall we use the same method of numbering, we'll give it one exhibit number?

MR. FREIDIN: Right. As is the case in

Mr. Hynard's evidence, these slides will be shown in order, in the order as they appear in the witness statement. And, Mr. Oldford, I would ask you, as you go through them, as you put the slide up, if you could just indicate on the record that you are now dealing with slide No. 1 or 2 or whatever the case may be.

MR. OLDFORD: Yes, sir.

THE CHAIRMAN: Exhibit 440.

---EXHIBIT NO. 440: Hard copy photographs of slides contained in presentation by Mr. Oldford.

MRS. KOVEN: Mr. Freidin, I can't find page 50's correction.

MS. BLASTORAH: Mrs. Koven, this is the correction that I attempted to explain yesterday and I guess I didn't do a very good job.

If you will turn to page 50 of the witness statement, paragraph 20 of the executive summary, that is the portion of the executive summary that deals with Mr. Oldford's paper. I guess it was a little confusing the way I explained it.

MR. FREIDIN: You will note from the errata that there is another change in relation to page 153 where certain numbers in the table on that page have been amended. A copy of that amended table is found attached to the errata. All right. That is, I

am advised, a copy of the amended table.

Q. Mr. Oldford, perhaps you could very briefly explain to the Board how your past experience enables you to speak to logging methods in Ontario?

MR. OLDFORD: A. Mr. Chairman, in my career I have worked for both the Ministry of Natural Resources and private industry. As a matter of fact, I worked with the Ministry from 1973 to 1980 as a forester predominantly in the field and between the period of 80-85 I worked with Abitibi Price as Chief Forester, Woodlands in Newfoundland. In 1985 I got a desire to come back to Ontario and rejoin the Ministry.

My experience on the company side, sir, got me involved very much in planning logging operations and making decisions with respect to logging methods. I was very much involved with the implementation of all logging activity conducted by the company on the Island of Newfoundland.

In my undergraduate years when I was studying to be a forester, I felt I should develop some first-hand experience and, for a period of time, worked at as a cutter and skidder operator with Georgia Pacific Pulp and Paper in McAdam, New Brunswick.

My experience with the company involved organizing and implementing logging methods and also

working to try and alleviate impacts that might reduce some other values in that area. We did extensive work with the Newfoundland Department of Wildlife in order to conduct logging operations in such a way that, for instance, caribou were not adversely affected.

From the government side, I did have extensive experience in the field between '73 and 1980 working from the control point of view with respect to logging methods, issuing cutting approvals, discussing operations directly with company officials and assisting smaller operators. As I was a unit forester on a Crown management unit, and some of the smaller operators without a lot of resources needed advice.

I would say I gained considerable experience in matching logging methods to stand conditions.

Q. Now -- I am sorry.

A. If I could continue. Just a moment, Mr. Freidin. And working with senior staff in the industry to resolve conflicts that develop with respect to logging methods and other values. Thank you.

Q. Now, Mr. Oldford, Mr. Hynard has outlined the the silvicultural systems and the silvicultural harvest systems prevalent in Ontario. Could you please define what a logging method is?

A. A logging method, Mr. Chairman, is a mix of men and machinery with its primary task to harvest timber and deliver it to roadside. It is really a timber cutting and extraction method and really, in that regard, nothing more than a mix of men and machinery with that task as its primary function.

THE CHAIRMAN: It doesn't include the hauling away, it doesn't include after it has been delivered to roadside?

MR. OLDFORD: No, sir, that would come under the transportation side of the business.

MR. FREIDIN: Q. What are the logging methods used in the area of the undertaking?

MR. OLDFORD: A. The three logging methods that we use in Ontario are the tree-length logging method, the full-tree logging method, and the shortwood logging method.

I do have three drawings that I could put before the Board and, as we proceed through this presentation, this discussion of evidence, you will be able to refer to the drawings and when I say full-tree you will be able to take a look and say: Yes, this is what full-tree is.

MR. FREIDIN: Mr. Chairman, in the rush to get started here we forget to put up those displays.

And perhaps, Mr. Oldford, you can do that now.

MR. OLDFORD: Yes.

THE CHAIRMAN: Are we going to mark these, Mr. Freidin?

MR. FREIDIN: I think they are in the witness statement. Maybe I better check.

MR. OLDFORD: Mr. Chairman, these drawings are exact duplicates to the extent that they could be duplicated to the drawings, sir, that are shown in the witness statement on page 154 titled Tree-Length Logging Method; page 158 titled Full-Tree Logging Method; page 161 titled Shortwood Logging Method.

MR. FREIDIN: Q. Can you briefly explain then each of those methods?

MR. OLDFORD: A. Yes, I would be pleased to do that, Mr. Chairman.

THE CHAIRMAN: Mr. Freidin, perhaps we should mark these even though they are duplicated here because I imagine that this exhibit will travel around with us--

MR. FREIDIN: That's a good idea.

THE CHAIRMAN: --once we go on the road show and other people won't have necessarily the witness statement before them. So why don't we give

them one exhibit number A, B and C.

Exhibit 441A will be the full-tree logging method, B the next one and C the one after that.

MR. OLDFORD: 441, sir?

THE CHAIRMAN: 441A will be that one, yes.

---EXHIBIT NO. 441A: Diagram depicting full-tree logging method.

THE CHAIRMAN: 441B.

---EXHIBIT NO. 441B: Diagram depicting tree-length logging method.

THE CHAIRMAN: And C.

---EXHIBIT NO. 441C: Diagram depicting shortwood logging method.

MR. FREIDIN: All right. Mr. Chairman, we are not going to sort of get into this in detail because we are going to be using the videos to explain some of these things.

Q. But just in a brief way, Mr. Oldford, can you just explain what those three logging methods are?

MR. OLDFORD: A. Yes, Mr. Chairman. The first logging method that I will speak about is the tree-length logging method, Exhibit 441B.

This was a very common logging method in Ontario in the past and I guess at one time in the order of 70 per cent of all wood was harvested by this method. Today approximately 30 per cent of the wood is harvested by this method.

The tree-length logging method involves the felling of the tree using a chain saw, the delimbing of that tree just about where it falls and the topping of that tree at that site also.

Q. By topping, you are referring to what?

A. Cutting off the top, Mr. Freidin.

Q. Okay.

A. Following that, the tree lengths are moved to roadside by a machine similar to the one depicted in this picture, a machine commonly referred to as a skidder or, in some cases, sir, a forwarder. And that is the tree-length logging method.

The full-tree logging method, Exhibit 441A, has increased in use over the past number of years and a little later on in the evidence we will examine the reasons why that has occurred.

Currently, the full-tree logging method is the method that is used to harvest approximately 65 per cent of the wood harvested in Ontario. It involves

the felling of trees and the removal of trees with limbs and top in tact, and this will be demonstrated very well in the video and on the slides. So it involves the removal of those trees with limbs and top in tact to roadside.

Now, under the full-tree logging method, the trees may be felled manually by a cutter with a chain saw or they may be felled using a machine which is equipped with shears, which is really like a scissors-type of arrangement, or a machine which is equipped with a saw head, or as in the case of Exhibit 441A, the machine is equipped with a felling head but this machine is also the carrier of the trees to roadside, this machine in particular, referred to as a feller forwarder.

Under the full-tree logging method, when the full trees are deposited at roadside as depicted in this exhibit, they are delimbed mechanically using a machine that we will see later on commonly called a mechanized delimber.

Moving on to the next Exhibit, 441C, the shortwood logging method. This method brings to mind the traditional view of logging with a worker carrying out the operations of felling, delimbing and cutting the trees into desired lengths at the stump for

forwarding to roadside. That was the old style of shortwood logging.

This particular exhibit shows shortwood logging using a coring shortwood harvester which is a machine that we will visit later that cuts the tree with one boom arrangement and uses another boom to delimb the tree and also cut the tree into eight-foot lengths or 2.5 metre lengths.

The cut pieces then, in this particular machine, are stacked from the bottom - which is very interesting and we will be seeing in the video - into the rack on the back of the machine. That machine then transports the wood to roadside.

Q. And I understand later in the evidence you will be indicating that the amount of time -- or, is that machine used very commonly anymore?

A. No, Mr. Freidin, not very commonly. Approximately 5 per cent, and it could be even less than 5 per cent, Mr. Chairman, of the wood is harvested by the shortwood logging method. Practically all of the wood that is harvested by that method in Ontario is harvested mechanically. There is very, very little of the traditional shortwood.

Now, the major feature -- the major difference between, as I see it, between the

tree-length logging method and the shortwood logging method versus the full-tree logging method is in the full-tree logging method the branches and the tops pretty well go to roadside - now, we will talk about some exceptions to that case a little later on - whereas under the tree-length logging method and the shortwood logging method the branches and tops are generally left at the site of the stump.

MR. FREIDIN: Mr. Chairman...

THE CHAIRMAN: Good time?

MR. FREIDIN: Yes.

THE CHAIRMAN: Okay. We will break for lunch until two o'clock.

Thank you.

---Luncheon recess taken at 12:27 p.m.

---Upon resuming at 2:00 p.m.

THE CHAIRMAN: Thank you. Be seated, please.

MS. SWENARCHUK: I am taking over the Ministry's case, Mr. Chairman.

THE CHAIRMAN: Excuse me, sorry?

MS. SWENARCHUK: I am taking over the Ministry's case.

MR. FREIDIN: I've given up.

THE CHAIRMAN: You know when you are

beaten, eh, Mr. Freidin.

Go ahead.

MS. SWENARCHUK: Mr. Chairman, yesterday I brought to your attention our concerns about the delivery yesterday of a new paper by Dr. Euler and Mr. James Baker with regard to Featured Species Management in Ontario.

Now, having had an opportunity last night to briefly review this paper, I have much more serious concerns about it than I was able to express to you yesterday, and the concerns briefly are this:

That, in our view, this paper amounts to a very substantial rewrite of Volume II of the Panel 10 witness statement. And might I just emphasize that it was dropped on our tables yesterday at the beginning of this panel with a covering letter merely identifying it as a new paper to be referred to. However, I think that is not a complete characterization of this.

Now, we didn't object when parts of Panel 10 got moved into Panel 9 and when - with not a lot of notice - we were required to cross-examine on the clearcutting materials. But, in this case, I want to emphasize to you that this kind of very substantial rewrite, in our view, makes this document one that should be treated as a new witness statement and it

should be subject to the kind of time lines that will give us time for interrogatories and for the preparation of cross-examination.

Mr. Chairman, counsel -- both counsel for my client have spent considerable lengths of time to date preparing for cross-examination on wildlife issues related to Panel 10. In addition, we have a very practical problem with this paper and; that is, as everyone in this hearing constantly reiterates, the area of the undertaking here is enormous, the number of species within that area is extremely large.

If there is a wildlife specialist in Ontario who is an expert in all these species, I haven't found him or her and no one that I have spoken to has identified any such person. I think no such person exists. And the result of that has been that we have been required to engage numerous experts to look at the wildlife materials for us with respect to timber management effects on wildlife. And that has been done - I am speaking very frankly - with regard to Volume II of Panel 10 and a great deal of concern has already been expressed by us in this room, a great deal of tension to the whole concept of featured species management.

If you will recall, in Panel 7 Mr.

McNicol talked about featured species management and we asked - I don't remember whether it was in interrogatories then, certainly it was also within this room - when are we going to hear about the theory of featured species management and we were told that Dr. Euler would address that issue in Panel 10.

When we received Panel 10, we filed a number of interrogatories related to featured species management - this is some time ago - and we received responses. We prepared our cross-examination and our experts advised us on the basis of those materials. Today -- or as of yesterday we have, in my view, a rewritten approach to the question of featured species management.

We are coming up to a two-week break and, in many circumstances, it could said that that is sufficient time to prepare for our cross-examination on this issue. However, given the number of individuals that we now have to go back to to get comments and the amount of material we are then going to have to synthesize again, two weeks, very frankly speaking, will not be sufficient.

Secondly, and equally importantly, I have no doubt that our experts are going to want -- advise us that there are very pertinent interrogatories to be

asked about this paper. It may be that other parties are interested in that opportunity as well and, of course, I think it is probably important to note that the anglers and hunters aren't here -- aren't able to be here this week but I would expect that they will have considerable interest in this document as well.

I am asking therefore, Mr. Chairman, that the Board rule that with respect to this document it be treated as a new witness statement on the issue of featured species management; that it, therefore, be subject to the usual guide -- usual time lines regarding the delivery of witness statements; that provision for interrogatories and responses be made and that Dr. Euler be subject to cross-examination at some later date when all of those requirements have been met. That is my first request.

My second request - and I would like to put this discreetly - is that this type of practice by the Ministry not continue; that if we are to have additional documentation filed with respect to witnesses and witness statements, that they be filed always in accordance with and with regard to the Board's time lines. This is not simply another scientific article that they have now decided to refer to, quite fairly enough, this is a rewritten witness

statement.

And, frankly, I think all of us - intervenors and other parties - are substantially prejudiced by this type of procedure both in terms of the time, as I say, that my colleague and I and our experts have spent on it and, frankly, our costs thrown away for what now requires a new set of reviews. This is substantial prejudice. It could have been avoided had adequate notice been given, had there been discussion of counsel and all the usual procedures that have to do with the delivery of evidence.

And so I am asking that the Board assure that this not occur again.

MR. FREIDIN: Are you suggesting that I did this intentionally --

MS. SWENARCHUK: No, absolutely not.

MR. FREIDIN: Whether discreetly or not?

MS. SWENARCHUK: Absolutely not, Mr. Freidin. I am not suggesting that it was intentional, I am sure it was quite unintentional, that is why I have gone to some extent to outline the degree of prejudice that has been unintentionally caused to us. But the issue is now squarely before us, let's assure that it not happen again.

THE CHAIRMAN: Thank you, Ms. Swenarchuk.

Before you have an opportunity to reply - Mr. Freidin, we will hear your reply now - but I should indicate that the Board will want to discuss this amongst ourselves, we won't rule on this at this time, we will give you a ruling on that probably tomorrow morning.

And just before Mr. Freidin starts, when you indicated in your submission that you wanted Dr. Euler to be available for cross-examination, were this treated as a new witness statement, did you intend that the direct examination would occur at this time on that new report, or would it be treated as an entirely different witness statement to be dealt with at some later stage in the proceeding separately?

MS. SWENARCHUK: I hadn't actually directed my mind to the direct examinations. I think I would be prepared to leave that to Mr. Freidin's convenience. But I think in light of the fact that we would wish to file interrogatories, and I believe other parties may as well, it might be preferable to hold the whole matter of Dr. Euler's testimony until later.

THE CHAIRMAN: Mr. Freidin?

MR. FREIDIN: Ms. Blastorah is going to respond to this matter.

THE CHAIRMAN: Very well.

MS. BLASTORAH: Mr. Chairman, I would

first like to point out a few facts behind or that go to the history of how this paper came to be served and how it came to be served in the manner that it was.

Volume II of Panel 10, which is Dr. Euler's portion of the statement of evidence for that panel, deals with the featured species approach and sets out that that is the approach currently used by the Ministry of Natural Resources and basically outlines in that document contained in Panel 10 that that is the fact, that the Ministry uses that approach, basically what that approach is and how it is intended to protect other species beyond the featured species.

We did receive interrogatories in relation to that material from a number of parties, one of those parties was Forests for Tomorrow. I should just point out as well that part of the information contained in the Panel 10 witness statement includes some material which is referenced as Appendix 1 to Dr. Euler's paper and that is entitled: The Classification of Habitat of Terrestrial Vertebrates within Forest Management Units of Ontario. I just point that out and I will come back to that later.

As I mentioned, one of the interrogatories that we received was from Forests for Tomorrow and that is their Interrogatory No. 27. That

interrogatory asked that the Ministry -- cited a statement from the Panel 10 material and asked a number of questions in relation to that.

The passage that was cited was from Volume II at page 519 and the sentence that was quoted states:

> "Over broad areas, at a minimum, the focus is on a species that is general enough in its habitat requirements to also supply the habitat conditions that are important to other species."

And then there were a number of items asked in relation to that and I would like to address three of those, they are -- Question 27A asks:

> "Please provide all available literature and internal MNR reports on the featured species approach to management."

Item B asks:

> "Indicate which reports demonstrate that this approach will allow the attainment of the MNR commitment (page 523, third paragraph) to "maintain all species of wildlife at levels necessary to sustain viable populations and meet wildlife objectives"."

And, again, that is a quote from the Panel 10 statement of evidence.

THE CHAIRMAN: All right. Would you mind just running by that last one again, please?

MS. BLASTORAH: Certainly. Essentially the interrogatory asks that we indicate which reports, relating back to the first question, demonstrate that this approach will allow the attainment of the Ministry of Natural Resources' commitment which is cited in the Panel 10 statement of evidence at page 523, paragraph 3, to:

> "...maintain all species of wildlife at levels necessary to sustain viable populations and meet wildlife objectives."

And the third item from this interrogatory that I would like to deal with is Item No. 27D:

> "Provide a brief history of the development of the featured species approach."

Answers were provided to the interrogatories and the answer that was provided in relation to those three items states:

> "Dr. Euler will address the subject matter in Panel 10 evidence and if we can

provide additional written information prior to that time we will do so."

The featured species paper that is under discussion here was provided in response to that interrogatory. And, as Mr. Freidin has already indicated, it was not available until this week.

Now, our answer to the interrogatory indicates that Dr. Euler would address the material in evidence-in-chief and would be available for cross-examination and that was our intent had the paper not been completed.

We had no guarantee that this material would be ready. It was a great deal of effort, I am told, to prepare this material, it is a very complex area, and an enormous effort was put forward to make sure that that material was -- to attempt to make sure that material was available in time for this panel of evidence and we were just barely able to do that.

THE CHAIRMAN: Now, were you to provide answers to the interrogatories -- to the questions posed, would those answers -- had they formed an answer to an interrogatory within the timeframe specified for answers to interrogatories previously ordered by the Board, would those answers differ from what is contained in this new report?

MS. BLASTORAH: No, I mean -- I am not sure I understand your question, Mr. Chairman, but let me --

THE CHAIRMAN: My question is: Dr. Euler has set out certain evidence in the witness statement--

MS. BLASTORAH: Yes.

THE CHAIRMAN: --Panel 10, Volume II. The parties, through the interrogatory process, have asked some questions based on that evidence. You would normally be under the obligation to provide the answers to those questions posed, if possible.

Had you provided those answers in the form of answers to interrogatories, would that information differ from the contents of this new report?

MS. BLASTORAH: No, Mr. Chairman, essentially that is the material that is contained in the report and, short of setting it out in that format, we could not answer the question. That is why no more expansive answer was in fact provided. The questions that were asked asked essentially for a -- well, I mean we could have said there is no literature available, I suppose.

THE CHAIRMAN: Okay. But going back to Ms. Swenarchuk.

Ms. Swenarchuk, had the answers in the form of that new report been produced -- sorry, had the material that is contained in the new report been provided to you as answers to your interrogatories within the timeframe for the Ministry submitting answers to interrogatories, would you have been prejudiced in that case?

They are your questions--

MS. SWENARCHUK: That's right.

THE CHAIRMAN: --to which answers are being provided, and I realize that the answers that have been provided in the form of this new report have just come in, sort of on the eve of direct examination.

MS. SWENARCHUK: Well --

THE CHAIRMAN: But how does it differ if you had received them a few weeks ago in terms of your experts being able to then provide you with the necessary assistance?

MS. SWENARCHUK: Well, first of all, I would have been as surprised then as I am now at what I consider to be a substantial change in the featured species theory from last November to now.

However, had there been -- had this arrived at the time of the interrogatories, at least there would have been the time available then. I am

not exaggerating when I say there are quite a number of people who now have to look at this.

THE CHAIRMAN: No, no, I am not suggesting that there is any change with respect to the fact that you will need to have expert assistance in order to be able to prepare for cross-examination.

I guess what the Board is interested in is to see whether or not, rather than this being characterized as a rewrite of their evidence as originally submitted, it is in fact answering interrogatories originally posed by you yourself or your client itself.

MS. SWENARCHUK: I think we can have quite a long discussion about that question. Clearly our interrogatories -- the interrogatory process has been extremely useful in this panel.

THE CHAIRMAN: But you can understand from the proponent's point of view, or the party receiving the questions, that they have no idea when they put in their witness statement in the first place or put forward their evidence what those questions are going to be.

When questions are posed that require some answers and they attempt to provide those answers, are they precluded automatically from never changing

the focus of their original evidence, or can they rightfully try and respond to the questions which may, in their own minds, necessitate some changes?

MS. SWENARCHUK: No, certainly they are not precluded from making whatever changes in the evidence new information discloses to them that must be made.

THE CHAIRMAN: Because they may not even have looked at this evidence themselves until the questions were asked. I think part of the problem is, is that parties can't be expected to be mind readers because they don't know what questions are going to be posed.

MS. SWENARCHUK: Mr. Chairman, this is the key question in wildlife management in Ontario, this is the theory by which the Ministry says it manages wildlife in Ontario.

It has been very clear to them, as I say since before Panel 7, that this was a matter of great interest to us and to the Board. Mr. McNicol testified to it at some length.

Now, if the Ministry does not concede that it amounts to a rewrite of the witness statement, that is fine, that is their position. As I say, had it been provided to us with the other interrogatory

responses, I simply would have dealt with it then, I wouldn't have waited until now to ask you this question; however, it was not and we are in the position now of, as I say, needing further reviews.

THE CHAIRMAN: That is a separate question. I am not going to deal with that question now, we are going to discuss that.

What I am saying is -- or what I would like to ask you: Had the answers been provided as part of the interrogatory process within the timeframe set down for that process, would you be raising the same objections as to the answers, in your view, affecting a change in their management process the way it was laid out originally in Volume II of Panel 10?

MS. SWENARCHUK: I would have raised that issue. I would not have raised it with the objection that I am raising it now, that it has been provided to us late. I would have also taken the opportunity then to simply file supplementary interrogatories to deal with the matter here, make our arguments down the line about what it says.

THE CHAIRMAN: With your own evidence?

MS. SWENARCHUK: With our own evidence.

THE CHAIRMAN: Or in cross-examination.

MS. SWENARCHUK: And argument also, and obviously that is going to continue to be an issue. But the very practical problem we are faced with now is how to integrate this, how to compare it to the previous material and cross-examine on what is, for our clients and I think for the Board, a very important question.

MRS. KOVEN: Yes, I have some questions. Was this paper written after you received the interrogatories for Panel 10?

MS. BLASTORAH: My understanding is that this paper or something like it, not necessarily in exactly this form, was contemplated prior to receipt of the interrogatories and material was being collected, I believe substantially to support Dr. Euler's evidence, not obviously because of the interrogatories because we had not yet received them.

So he, in the process of preparing to give his evidence, was gathering this information and collecting it for his own use. I don't know at what stage the paper actually began to be drafted, but some form of this paper I believe was contemplated prior to receipt of the interrogatories.

THE CHAIRMAN: Well, we have Dr. Euler here, why don't we just ask him.

MRS. KOVEN: Does this paper represent any kind of a shift in policy on the part of the Ministry?

DR. EULER: No, I don't believe it does.

MRS. KOVEN: Where does this paper or the paper from which it is extracted go to outside the hearing? Is this prepared only for the hearing, or will it be used in other circumstances?

DR. EULER: Well, it is prepared primarily for the hearing and after the hearing I would hope it can be used as a document for others to review who wish to know what our policy is in this area.

MRS. KOVEN: And there is nothing in this document that is different from your witness statement?

DR. EULER: No, it is a much more thorough examination of the issue and it goes into excruciatingly detailed analysis and, in my view, it is a lot of detail, it is very detailed and it calls upon a lot of knowledge in the literature.

MR. MARTEL: I guess that is what creates the problem for Ms. Swenarchuk, Dr. Euler.

DR. EULER: That's right. But I don't think it departs from our position. As a Ministry, our position I think is the same.

MR. MARTEL: For featured species?

DR. EULER: That's right. Now, it was just not possible to deal with all of that detail in the main evidence that we prepared, and for those who are interested, this gives them a chance to see exactly what we mean and exactly where the strengths and weaknesses of our policy lie. The paper addresses both the strengths and weaknesses of what we are trying to do.

MS. BLASTORAH: As Dr. Euler has pointed out, it is my understanding that there is absolutely no substantial change between this paper and the material in the evidence and it is -- as indicated in the Board's Regulation 4-88, the purpose of interrogatories is to allow a party to seek clarification and explanation of material contained in the statement of evidence. And as Dr. --

MRS. KOVEN: Are you saying then this is response to the interrogatories?

MS. BLASTORAH: Well, it was provided as a response to the interrogatories essentially. I mean, the interrogatory clearly indicated interest on the part of Forests for Tomorrow and we did indicate in our response to that interrogatory that if further material became available we would provide it and, essentially, that is what we have done.

This material responded to the concern raised in their interrogatory and it did become available, granted just before the panel took the stand, but it did become available so we made it available to the parties.

We could just as easily, I suppose, have dealt with it orally through Dr. Euler since the panel was about to begin, but the paper was available and we had indicated we would provide it.

MS. SWENARCHUK: Mr. Chairman, might I just point out that there is no reference in the covering document that came with this to the interrogatories as is the normal course, when additional information is provided in response to interrogatories it is identified as such. And as for whether this amounts to a departure from the previous evidence, you know, we could argue at some length about how many details make a change.

THE CHAIRMAN: Well, that is an argument for you to make. I mean, the Ministry can take whatever position they want, you can argue to the contrary and I guess ultimately the Board would decide in weighing the evidence whether you or the Ministry were correct. So I am not sure we are interested so much in that argument now, as to determine essentially

what is this document that we are talking about, how do you characterize it, and how can it properly and fairly be utilized in evidence.

And we have heard certainly your arguments as to why you feel you have been prejudiced in terms of the manner in which it was presented and the timing during which it was presented in relationship to the panel taking the stand. So that is a separate issue which we will try and deal with over the evening.

But we wanted to try and characterize what the document was so we can determine in our deliberations tonight whether or not it should in fact be treated as a completely separate witness statement to be handled with a new interrogatory process, et cetera.

MS. SWENARCHUK: At a minimum my position would be that it is an addition to the witness statement.

THE CHAIRMAN: It may be a supplementary to the witness statement or something like that from your perspective.

MS. SWENARCHUK: And raises sufficiently -- in, as Dr. Euler says, sufficient detail numerous issues which require, in fairness to

the participants, that we have the opportunity to treat it as a witness statement.

THE CHAIRMAN: And we can appreciate those arguments.

Ms. Blastorah, if it were to be characterized, for the lack of a better term, as a supplement to the witness statement itself and it did require an opportunity for the intervenors to have it reviewed by experts and possibly supplementary interrogatories posed with respect to the new document itself, how does that affect Dr. Euler giving evidence on what was in Panel 10, Volume II at this time?

MS. BLASTORAH: Well, Mr. Chairman, I would like to say a couple of things in response to that. First of all, I think it would be a problem in terms of his evidence here because essentially his evidence is dealing with this material.

As I attempted to point out already, the points raised in the witness statement have only been expanded upon in this new paper. So it is just a greater level of detail dealing with the evidence he was to present here today.

And I guess one of the problems we always have in preparing this kind of written material is where do you cut off, like, how far down that gradient

of detail do you go in providing the written material in the witness statement.

You have seen that we have attempted to scope the issue by -- or scope the issues here and not repeat written evidence in oral evidence, and yet we are still having substantial oral evidence and cross-examination. So, you know, we have to ask ourselves should all of that material have been provided in the witness statement and how were we to know that that should have been done. As you yourself have pointed out, we are not mind readers.

So as the hearing progresses the issues become clearer; as the interrogatories are received, issues of concern become clearer and in preparing the written material some time in advance of its provision to the parties and as, you know, on an on-going basis throughout the hearing, it is very difficult for us to determine how much of that material should actually go in the witness statement.

And we have already had complaints both ways from the parties; we have had complaints that the material was not substantial enough and we started providing more material in the witness statements; and then we have been confronted with complaints that they are being deluged with paper. So we don't seem to be

able to strike a happy balance here, and we are doing the best we can but, you know, it is a very difficult balance to strike.

The material that is provided in the featured species paper is really only a justification or further clarification of the position which is clearly set out in the witness statement and just expands upon those points. It is not a change from it; it is not a departure from it in any way.

So, in that sense, it would be very difficult for us to delay the evidence of Dr. Euler. I mean, it is an integral part of this panel and we have already pointed out to you that it has been hard enough to isolate the harvest material from the rest of the activities. To further break it up by removing the wildlife component from the harvest panel would be an additional problem and take is farther from reality again.

The second point that I would like to make is that we are feeling our way along in this process of a class environmental hearing and how do to deal with the interrogatory process and the issue of undertakings. Undertakings are not something that normally come up during the course of a hearing and we have had some discussion about that.

Ms. Swenarchuk raised the issue of being confronted with material on short notice or during the course of the hearing and so on. Well, a lot of that material has been provided in response to undertakings that were given during oral evidence and, again, that is not something we could have foreseen. We have attempted to do our best in this regard, but we are all feeling our way and it is going to be sometimes unavoidable, as I am sure she will find when it comes to her case.

THE CHAIRMAN: Well, the Board can appreciate this and I think it should be understood, and I think to some extent it is by all the parties, as far as process goes, this hearing is a little different than any other hearing, I would suggest, that has certainly been before this Board or even a joint board.

We are not dealing with a project-specific application, we are not dealing with a site-specific application, and we are not dealing with an application; that is, the normal form of applications before this Board in that this is dealing with a plan as opposed to an undertaking that comprises a facility.

And the interrogatory process is complicated, I think it can't be simplified to the

extent that the Board could like it to be simplified because, frankly, we are dealing with a number of parties and an enormous volume of evidence and we are trying to do it in a manner that allows parties who are not present on a daily basis to also take part. And there will just have to be, to some extent, accommodations by both the Board and all of the parties as we work our way through, from a procedural standpoint, this type of hearing.

There will be mistakes, there will be difficulties presenting itself to the parties and the Board from time to time and we are going to do our best to ensure that the matters are dealt with in a manner which is non-prejudicial and as fair as we can possibly make it to all of the parties, and that includes the applicant as well.

I think -- are you basically finished with your submissions?

MS. BLASTORAH: No, Mr. Chairman, I do have a couple more points I would like to make.

THE CHAIRMAN: All right.

MS. BLASTORAH: Another point that I would like to raise relates to what you have been just talking about and that is the issue of interrogatories. There does come a point at which the interrogatory

process has to be cut off or we would here until Doomsday.

The interrogatories are posed to clarify and expand on material provided in the statement of evidence. To allow further interrogatories on the material that's provided in response to interrogatories, that's a process that could go on and on and on and, surely, the point must be that interrogatories are meant to assist in preparation for cross-examination, not to be a replacement for cross-examination.

THE CHAIRMAN: Nor are they a replacement for the party posing them putting in their own evidence.

MS. BLASTORAH: Precisely. And, I mean, that is another point I would like to make in relation to this. Ms. Swenarchuk has indicated that she has a number of experts that are assisting her in this regard and I assume that they will be available to her for her case as well, and if she has some problem with the material we have provided, or the Ministry's position on the featured species approach, she can certainly put in that material through her own experts during her own case, and it does not all have to be done through our witness during our case.

She has the material now and she has a very detailed outline of what the Ministry's position is and what they feel is the support for that position - and, as Dr. Euler has pointed out - what we feel are the weaknesses of that approach. So if she has all that material, I think it is encumbent upon her to use it to prepare her own case, but I am not being critical in any way in that regard, I am sure she intends to do that.

Another point I would like to make is that the issue of recalling witnesses is going to become a problem if we continue to attempt to deal with everything that comes up in that way.

We already have a number of witnesses being recalled, we also have Dr. Baskerville being called who was not anticipated as a witness - that's a different issue, granted - but we have a number of witnesses who are being recalled already.

Not only does that prolong an already lengthy hearing process, it also tends to break up the case, to take things out of order and it becomes increasingly difficult not only for the panel members but for the other parties and particularly for parties who are not in full time attendance to following the evidence.

THE CHAIRMAN: That's provided, Ms. Blastorah, that the necessity of recalling the witness isn't at the instance of the party who called the witness in the first place.

By that, I mean, if there is a problem with the way the documentation was exchanged with a particular witness, or if a matter is being dealt with in a different panel in more detail later on, it may necessitate the recalling of a witness.

MS. BLASTORAH: I am not sure I see your point. Clearly we have Mr. Hynard coming back in later panels, but he was an intended witness so that's not a problem.

THE CHAIRMAN: I know, but where we have indicated in some cases that maybe witness would have to be recalled is because of undertakings which were given that were delivered after or going to be delivered after that panel had completed its testimony, and then further questions arise as a result of those undertakings or the further documentation, then obviously the parties who asked the questions in the first place and extracted the undertaking from you should have an opportunity to examine the witness.

MS. BLASTORAH: Oh, I am not disputing that, Mr. Chairman, and clearly there are situations

where that is going to be the only fair way to deal with that.

My concern is that when we are faced with that situation, because of the necessity or the procedure that's been adopted of giving undertakings and dealing with them in that way, we already have that situation as a given and; that is, as you have indicated, the most fair way to deal with that and, in some cases, will be unavoidable.

But to compound that situation where you have Mr. Armson coming back to deal with clearcuts, and now we have Dr. McNamee coming back in a later panel to deal with issues when he wasn't originally to be a witness, and we have those things happening in a number of cases, to compound that more than is absolutely necessary I think is going to be disruptive and lengthen the hearing interminably.

THE CHAIRMAN: Well, I can assure you, Ms. Blastorah, the Board will not order the recall of any witness unless it feels that to do otherwise would be unfair. We are the last ones, believe me, that want to prolong this hearing.

MS. BLASTORAH: I appreciate that, Mr. Chairman. I think we all appreciate that.

Just a couple of more short points. I

would point out - and it is my understanding that this is correct - that the interrogatories received from Forests for Tomorrow in this matter which essentially gave rise to the provision of this paper were received late and, as the Board has indicated, we were not obliged to answer those interrogatories.

Now, to date we have not refused to answer any interrogatories although we have been fairly regularly receiving them late. And that is not only a great deal of work for us, it is somewhat disruptive because we already have overworked staff and witnesses and people on the stand who are trying to answer interrogatories on other panels and it becomes very disruptive. But we have tried to be very accommodating in that regard.

And I would just point that out, that this essentially was provided in response to a concern raised in an interrogatory that we were not even obliged to answer. I would just point that out for what it is worth and, you know, I sympathize with Ms. Swenarchuk that this is a lot of material and interrogatories will sometimes be late, which is why we have attempted to answer them.

I would just like to sum up our position once more then, to say that the document that has been

provided is really a justification of the position that is clearly set out in the witness statement, it is not a change from that position, as has been suggested. The Board clearly has our position in our material and Dr. Euler's comments on it, his characterization of his paper, you have heard that.

He intends to deal with that material here and Ms. Swenarchuk will have an opportunity to cross-examine on it. We do have all of next week, which will still be oral evidence in this panel, plus a two-week break which essentially is a three-week period to allow her to review that material. She has indicated she doesn't feel that is a sufficient length of time. That's something that has to be left with the Board. That is, given the paramaters within which everyone has working in this hearing, I think that that's not an unreasonable length of time for someone to review one paper.

It is not as if it is not an issue that she hasn't -- her experts haven't addressed their mind to. I mean, she has indicated that she has experts who have dealt with this material, who have considered the issues and who helped her prepare her original interrogatories. They have already had our position stated in the witness statement and they have had time

to consider that. What we provided them with is further justification for that position.

So I would only like to point out, basically in regard to the fact that three weeks is a fairly substantial chunk of time to deal with something that they have already turned their minds to.

Secondly, if the Board believes some prejudice has been called and some relief is warranted, another thing I would suggest is that perhaps Ms. Swenarchuk could cross-examine on behalf of Forests for Tomorrow at some later time during the order of people cross-examining on this panel, so that maybe she could go just prior to the Ministry of the Environment or even after the Ministry of the Environment.

Now, Ms. Seaborn may have something to say about that. But she could certainly go later in the order of cross-examiners, and that has been done already. That would give her probably at least a month to review this material.

I think those are all my submissions, Mr. Chairman.

THE CHAIRMAN: Taking into account what you just said as your last point, could the industry indicate, Mr. Tuer, how long you might be in terms of your examination of this panel?

MR. TUER: I don't think I can give you a useful or accurate answer to that question because part of it, I suppose, is going to depend upon the resolution of this argument itself.

THE CHAIRMAN: Okay. Ms. Seaborn?

MS. SEABORN: Mr. Chairman, I think this is one panel where I would not like to give up my right to cross-examine last. And in terms of Ms. Blastorah's comment, we would like to go at the end of the order.

THE CHAIRMAN: Do any other parties have any submissions to make with respect to Ms. Swenarchuk's original motion?

MS. BLASTORAH: Mr. Chairman, maybe I could point out while I am at the microphone that I believe there are quite a few parties who will be cross-examining on this panel.

I think both Mr. Colborne and Mr. Hunter and Mr. Edwards, I believe, has also indicated he will be here. So I expect -- and OFAH, I believe. So I believe there will be probably fairly extensive cross-examination.

THE CHAIRMAN: Okay. Does anybody else want to make any further submissions?

(No response)

---Discussion off the record

THE CHAIRMAN: Okay. The Board will, as I mentioned, consider this whole issue hopefully this evening and be able to come back tomorrow with an indication of what we think should occur.

I guess at this time we might as well just continue on with Mr. Oldford's evidence.

MR. FREIDIN: Mr. Chairman, from time to time lawyers, including myself, are accused of what I have described as legal linguistic salami-slicing, and I think maybe I did a little bit of that when I was dealing with those words, and I would like Mr. Clark to perhaps just go back there and address a couple of matters. There may be some confusion and perhaps confusion that I caused.

MRS. KOVEN: Is this your confusion, Mr. Freidin, or the Board's or...

MR. FREIDIN: It will get me out of some hot water really, that's...

MR. CLARK: I wasn't sure whose confusion it was, but I thought it might be worth one more try. So I am going to very, very quickly go through the first three because I think that's perhaps where the problem may arise.

When we talk about prevent, we talk about avoiding or dealing with effects beforehand; that is,

addressing them in the planning and in the design of operations. So we anticipate an effect and we deal with it through the planning process and in the design of operations.

Minimize. We anticipate that effects will occur but the aim is to make them as small as possible during operations. And, in that context, we address them in planning or in the design and in the implementation of operations. And I talked about limiting the time of day or conditions -- or putting conditions on operations in the vicinity of tourist operations.

The third one was mitigate, which I think is where there may have been a little confusion. We said that effects do occur, additional actions are taken after operations to alleviate, lessen or reduce the severity of an effect. And in explaining that I said we address that in planning and implement additional action after implementation of operations.

Now, I think what we mean there is simply that at the time we are planning, we identify potential effects, we may take action to either prevent or minimize them but, having done that, situations may arise where the level of effect that actually occurs is greater than we would like; that is, a negative effect,

and at that point in time we would take additional action to alleviate that or lessen that effect. And I think that's the distinction I wanted to make.

I think I used two examples. One was the example of a water crossing where we anticipate that there could be potential problems with erosion and sedimentation. We take those into consideration and take measures to either prevent or minimize, but subsequently find that our actions weren't sufficient, we might take further action by way of perhaps seeding and revegetating slopes, for example, to alleviate that problem.

The other example I think I used was the example of a road where at the time we were involved in planning in the design of operations we recognized that the road would create additional access that might, for example, be undesirable from the point of view of certain users in the area, whether it be cottagers or lodge operators. We might have taken particular action either to prevent or minimize that effect.

Having made those decisions and implemented them, we might find that additional action was required, as I said, gating a road perhaps instead of just signing it to mitigate the effect after the operation had occurred.

Having said that - and we have had many, many discussions about this and perhaps it is my particular orientation which is still fairly strongly towards the field - I think Mr. Freidin used the term -- well, I guess what we are doing is we are dealing with fine distinctions here. And I want to make the point that in the real world that we live and work in, the distinctions are sometimes far from clear. And in a very simple way what we are normally trying to do is to stop or lessen negative effects. And I think that is the main point that I would like to make.

That's not to diminish the importance of being precise in our meanings but, in practical terms, on a day-to-day basis at the field level we are trying to, I guess, really anticipate, stop or lessen negative effects.

MR. FREIDIN: Q. And that less precise approach was the one followed or in preparation of papers?

MR. CLARK: A. I believe so, yes. In certain instances we have been very explicit, but I think when you go through the papers from time to time you will see discrepancies, and I think what I am really saying here is, I wouldn't want to lose sight of the essential message of the paper because we are

drawing too fine a distinction in some cases in terms of the specific words that have been used in this context.

Q. Thank you. Now, Mr. Oldford, could you please identify for the Board the main messages that you wish to convey through your evidence?

MR. OLDFORD: A. Yes. I guess the first message that I would like to convey is the fact that the logging method is just the first phase in the application of a silvicultural system, a silvicultural harvest system as explained earlier by Mr. Hynard.

The second important message is the fact that the way logging methods have developed in Ontario, the way they have been developed has been largely influenced by economic considerations, the need to be able to deliver wood to roadside at a fair cost, the availability of manpower.

As there are few workers out there willing to work in the woods with a chain saw, there is a tendency to mechanize and to get more mechanized equipment.

There are changing values in the work place. Years ago it wasn't difficult to get someone to go and work a hundred miles north of Thunder Bay in snow with a chain saw cutting under the shortwood

logging method, but today that's not the same, and that has led to changing approaches to logging.

Also, there has been increased development in technology. There has been a considerable development in the use of hydraulics, better equipment, better carriers; in other words, that's the unit that the heavy mechanical machinery would go on to enable the development of further mechanization.

And last, but not least, is the fact that there is a very sincere and real concern about the natural environment and that has lead to the development and use of wide tires in order to protect sites, organic sites, sites that are clay sites like in the Clay Belt.

As I proceed a little farther in my evidence I intend to deal with the factors that influence the selection of a logging method, those factors being: Stand composition, how the stand is composed, is it a single species, multi-species; stand condition, are the trees in good health or have they been exposed to some form of, say, insect attack; the variability in the stand, are the trees of mostly the same size, if so, it is much easier to get mechanical equipment to work well because all of the trees that

you are dealing with are relatively the same size.

Terrain and site conditions are important factors, economics as I said before, safety and labour, extremely important to the industry. And a little later on in my evidence I will try to impress upon the Board the fact that the move toward mechanization in Ontario in the harvest of the forest has contributed significantly to a decline in injuries -- in compensible injuries.

Q. Okay. Mr. Oldford, I see some pens furiously scurrying across the page and perhaps if you could slow down just a little bit.

A. I will do that, Mr. Freidin. I guess I had hoped to be finished today at five.

I guess the theme to my evidence is that if the logging method -- if either of the three logging methods that we have in Ontario is applied to the stand with good consideration, good judgment - as I believe that is the case today in Ontario, and I believe also the Board has had first-hand opportunity to see some of this activity in the field - with the good application of logging methods the sites will be protected and the risk of damage or injury to a site is very, very minimal.

MRS. KOVEN: Are there any other logging

methods used in Canada aside from these three?

MR. OLDFORD: Not that I am really aware of, no. There is some full-tree logging used in a couple of provinces where instead of delimbing right up the roadside, the trees are chipped and used for purposes other than, say, for the production of pulp and paper.

When I worked with Abitibi in Newfoundland, we were chipping birch trees at roadside as a supplement to energy needs in the plant. In B.C. and also on the east coast in Newfoundland there is some cable logging, some high-leave logging and that logging is suited to very, very steep slopes and slopes that run continously for long distances. Completely different types of logging than this.

MRS. KOVEN: But these methods aren't unique to the Ontario situation?

MR. OLDFORD: No, these methods would be right across Canada. Actually, these methods would be practically anywhere in Canada, in Scandinavia where the forest conditions are similar and the site conditions are similar to what you experience in Ontario.

I guess another message that I would like to leave the Board with is that the forests of Ontario

have developed over a number of centuries due to natural disturbances. And, as a forester, when I look at a logging operation and see the activity that logging causes I see that as a disturbance not unlike the natural disturbances.

And as you heard yesterday or the day before yesterday from Mr. Armson, as we have controlled fire in the boreal forest, then harvesting and clearcutting in the boreal forest is serving much the same purpose for us.

The last point that I would like to make is the inter-relationships that exist, the inter-relationships between the silvicultural harvest systems and the logging methods. These are important and they are dictated, for example, by the silvics of the species. If it is a jack pine stand, as Mr. Hynard said, we need a clearcut. If we are going to clearcut a jack pine stand we can use any three of the logging methods that we have at our disposal.

On the other hand, if it is a tolerant stand, tolerant hardwoods in the Great Lakes/St. Lawrence region, probably close to the Minden area, normally only one of the logging methods would apply and that would be the tree-length logging method.

So, in summary, the logging method is

just the first phase in a continuum, the silvicultural harvest system that involves the logging and then moves on into renewal and maintenance and I guess by that we grow a forest for tomorrow.

THE CHAIRMAN: Any objection to that last line?

MS. SWENARCHUK: If only that were true.

MR. FREIDIN: Q. Mr. Oldford, can you give us an example of how the choice of a logging method could be influenced by the choice of the silvicultural system?

MR. OLDFORD: A. Well, I guess I would -- without wanting to repeat myself too much, I would say if we are going to use the clearcut silvicultural system, and I have to think about a site now and I probably think about a jack pine Site Class 2 site in northwestern Ontario, and I am thinking about how -- we have got to make a decision how we want to renew that site.

If the decision is that we are going to renew that site through seed that are currently in the cones on the tree tops of those trees, then we would use either the tree-length logging method or the shortwood logging method. We would want to use a logging method that would leave the limbs and the top

on the site. Now, that normally would have to be followed up with some site preparation, et cetera.

Another example and an excellent example would be in the Clay Belt. If we were going to harvest a black spruce stand that had advanced growth in the stand either from seeds germinating and small seedlings being there or through layering - which is a process where a low branch gets embedded in the moss and eventually starts to become a tree - we could use I would say the full-tree logging method.

That is the method that Spruce Falls is using to harvest those sites that have that advanced regeneration and to harvest them very carefully so that immediately after the harvest they have significant stocking levels and they are on their way to producing a forest of spruce trees. And we will see that in the slides.

Q. And in that last example of Spruce Falls where they used -- what method was it that they used when they wanted to protect that advanced regeneration?

A. That is a logging method that some refer to as CLAAG, I guess it is careful logging around advanced growth, C-L-A-A-G. And after the advent of the forest management agreements there came a need for

the Ministry and the company to find a way of building that into the silvicultural ground rules and recognizing it as a good treatment for those sites in the Clay Belt.

So we created another term that you will probably hear of quite a bit during Panel 11 and we call it HARO, H-A-R-O, and that means harvest and regeneration option and we have produced a very nice script and film that would be available for the Board to review. And what that system really does, it's the application of a logging method like the full-tree logging method conducted very, very exact in such a way that the advanced regeneration that exists in the stand is protected.

There is one other element, too, to that system and I should mention that. If after a couple of years - and it could be really any time in a continuum between one and five years - the company determines or the Ministry, because they are out there visiting the same sites, identifies to the company that part of that area treated under the HARO system is not regenerating, there is provision for the company to go back and augment the regeneration, sweeten it up so to say with some planted spruce.

Q. Okay. Now, is the selection of a

particular logging method influenced in any way by the equipment that a company has available?

A. Yes, very much so. Companies operate basically on the same -- in the same geographic area and over time they get to know their land, they know the terrain, they know the sites, they know the type of trees that they are harvesting and, as a result of that, over time they acquire equipment and machinery that is particularly suited to handle those conditions under which they operate.

The purchase of logging equipment involves a considerable outlay of capital. So once a company gets into a certain logging method and gets the equipment necessary to apply that method, it can't flip-flop and change its methods very often, but what it can do if it incurs say different stand conditions, different site conditions, is that it can modify the application of the method to suit the particular site that it has to harvest trees on.

Q. Now, could you turn to page 151 of the witness statement. Now, you indicated that in certain situations where the company perhaps had a certain kind of equipment, that they could modify the method. What did you mean by that?

A. I will explain it by giving an

example. A company may have all the equipment necessary to conduct full-tree logging or tree-length logging - either one of those types of logging - but it might have equipment, for example, skidders of a certain size or power class that have 24-inch wide tires, probably a normal tire, and that would be fine for working on soils with moderate to high-bearing capacity.

But, should they have to work on a soil that had a low-bearing capacity, on a site that had a low-bearing capacity like the clay sites during the frost-free season, like deep organic sites for instance, they would modify the equipment or could modify the equipment by putting on larger rims and larger tires and moving to what is commonly referred to now in the business as high flotation tires or high -- and it could even be high flotation tracks to go on track equipment if they were using a track feller-buncher, feller-buncher in the full-tree logging method.

Q. What you have described then is a modification of the equipment, not a modification of the logging method?

A. That is correct.

Q. Thank you. Mr. Oldford, I understand

that you have got some slides that you would like to show?

A. Yes, and I will get that set up right away.

THE CHAIRMAN: Why don't we have the afternoon break at this time, Mr. Freidin?

MR. FREIDIN: Sure.

THE CHAIRMAN: And we will come back after that.

MR. FREIDIN: Fine, thank you.

THE CHAIRMAN: 20 minutes.

---Recess taken at 3:15 p.m.

---Upon resuming at 4:00 p.m.

THE CHAIRMAN: Thank you, ladies and gentlemen. Please be seated.

MR. FREIDIN: Q. Okay, Mr. Oldford, you are on.

MR. OLDFORD: A. Thank you, Mr. Freidin.

What we are going to see right now is a slide show that should run about 30 or 40 minutes dealing with the logging methods. All of the slides in this show, beginning with slide 1 right through to the end, are numbered numerically in accordance with the numbers in the text page 146 to 147, and they are as depicted in the photographs in the text page 174 to

181; that is Panel 10, Volume I.

And the first number of slides that we will go through are just re-emphasizing some of the points that we have made to date in this evidence and I will proceed through them quickly.

So logging methods in Ontario, and there are three of them: Tree-length, full-tree, shortwood. And, as we discussed earlier, there are quite a number of factors that influence the selection and design of a particular logging method, stand variability, stand condition, site conditions, economics, labour and safety, silvicultural considerations, and other values.

MR. FREIDIN: And that particular list, Mr. Chairman, is reproduced at page 151.

THE CHAIRMAN: Right. Mr. Oldford is there any ranking in order of that list?

MR. OLDFORD: No, sir, none at all. It would depend on the particular site, particular conditions that one was conducting the logging operations on, sir.

We are going to look at the tree-length logging method in the Great Lakes/St. Lawrence Forest, then we will look at it in the boreal forest, and then we will look at the full-tree and then the shortwood, so that we go through it in a logical progression.

So this is in the Great Lakes/St. Lawrence Forest and this is slide No. 1. And what you see here is the first stage in the tree-length logging method in that forest. It is the felling stage, and safety is a big factor in logging, a very important factor and one that was very -- I became very involved with when I worked with the industry. And that cutter there would be wearing pretty normal equipment including a hard hat, ear muffs and some cutters choose to wear ear plugs, a visor, safety gloves, safety pads inside of his pants and a modern chain saw.

After the felling the trees are delimbed and, in the case of hardwoods in this forest type, there is not much limbing involved. In this picture you can see a skidder, a wheel skidder moving toward a landing with two tree-length pieces in tow. Now, in this forest condition --

MR. FREIDIN: Q. Can that be focused any better, please? There you go.

MR. OLDFORD: A. That is probably as good as I can get it, Mr. Freidin.

Q. Okay.

A. In this forest condition, in a selection -- in the selection system, the decision might be, depending on the number of residual trees

that are going to be left, to skid the tree length to roadside in the full length of the tree or you may decide to cut it in two depending on the particular situation and whether or not the skidding -- the process of skidding would cause undue damage to the remaining stems. So that would be very, very much a decision that the logger would make right on the site.

This is a typical landing in the Great Lakes/St. lawrence forest region. The logs skidded to the landing are then slashed - and slashed means cutting the logs into various lengths - and unlike the northern boreal forest where the main product is softwood lumber out of the saw mill industry, in this forest the lengths would vary depending on the product that one was selecting. Some time earlier we talked about hemlock in that forest. There is a hemlock right in the foreground and in the background there is hard maple on the ridge.

And in that forest -- this is a picture of a pretty typical transportation of logs to a mill and this is a truck loaded with two tiers of 16-foot logs.

Q. Don't forget to give us the number of those pictures as you go along, Mr. Oldford.

A. Yes, that is No. 4. Moving on now to

the tree-length logging method in the boreal forest.

And this picture is a little dark. The cutter is at the base of the tree getting ready to fell the tree with a chain saw in preparation for the skidder to choke the tree, and that is a process whereby a cable is put around the tree and the tree is pulled out by the skidder to roadside.

Q. We will see some pictures of that operation a little later?

A. Yes, we will. There is a couple of things that are of interest in this slide. You can notice the amount of slash, what we refer to as slash around on the ground and debris. And in manual operations or operations that have a higher manual component where workers are required to walk around on the ground and, in the case of tree-length, walk around with a chain saw felling trees, delimbing trees, the more slash that is on the ground the more risk, I would say, of injury. And that has been a prime consideration in the move to more mechanical -- more mechanized logging operations.

This stand, and you can see by looking at the trees in the background, is predominantly overmature jack pine and spruce.

This is picture No. 6 -- slide No. 6.

This is a typical slide of two workers, one generally being the operator of the skidder and the other a tree-length cutter in the process of connecting a cable to the cut stems. These trees are generally delimbed right where they fall. Sometimes though, because of the nature of the way the tree falls and with good considerations for safety, these cutters may choose to delimb part of the tree and then move the tree from where it was felled to a place where the rest of the delimbing can be conducted safely. I am just checking my notes to make sure that I don't miss anything.

Q. Mr. Oldford, when they have this cable, is the cable a sort of a standard length; in other words, how far back can they go to pick up trees?

A. Oh, it would vary. The cable can go out a hundred feet or -- and then you could have a longer cable or a shorter cable depending on the conditions that you were working under. You could have a cable of a different caliber or diameter depending on the size of the trees that you were skidding.

And, in some cases, if you were conducting a logging operation near an area of concern and one of the prescriptions was that the machine -- the machine would have to stay a fair ways out of the area of concern, you have a choice to go to a longer

cable.

I guess the limiting factor is the size of the winch drum and if you put on a big cable you have got to have fewer feet of it, but there are all sorts of options that one can employ to meet a particular situation. Again, the slash conditions here are pretty typical and makes it difficult undoubtedly for workers to move around on the site.

In the background there, just behind the skidder, you can see a lunch shack. That is a pretty common feature on all the operations and just a little farther out I believe there is a brow of wood or some wood in a tier.

Q. What about the tires on that particular skidder, Mr. Oldford, are those regular tires or are those the flotation ones that we have heard about?

A. Well, we have talked about flotation tires. These are very regular tires and quite suited to this type of site. This is an upland mixed jack pine/poplar site and there would be no problems with bearing pressure in this soil and no need -- no advantage to using a different type of tire or different equipment than that, other than if you made the decision to use a different logging method on that

site like the full-tree method.

This is slide No. 7. It depicts two cutters finishing the delimbing on about five or six tree lengths that have been pulled out. And this is the phase of the operation - and I can speak with considerable experience in this regard having nicked myself once or twice with a chain saw - this is the phase of the operation that is particularly dangerous if one is not careful.

Slide No. 8. This is the skidder now with about five or six tree lengths heading for the landing. I don't think that chap would -- he is not very challenging that day because he doesn't have a very big load on. In total, I would say that he has about -- oh, just over a metre, maybe a metre and a half, a cubic metre and a half of wood and he can haul probably two to three times that load.

Q. And again the tires on that skidder, which kind are they?

A. The same skidder, same tires, both particularly suited to that type of site. And you can see on that upland jack pine/poplar site you can see some small residuals. Practically all of the jack pine has been removed by now. And in the very foreground you can see the top of a jack pine tree, the type of

top that you would want to leave behind if you were conducting renewal from the jack pine cones.

Q. Is that particular cab an enclosed cab, Mr. Oldford?

A. Yes, that is another safety consideration. I can't remember exactly when it was required that these skidders have doors and that sort of thing, back some half dozen of years ago I guess, but the operator is running that machine within the confines of a very safe cab that affords roll-over protection and a screen around the cab to avoid injury from debris.

Q. Can you advise, is that standard?

A. That is standard in the business. That is the law now to operate a logging operation in Ontario.

This is a skidder working at a landing and you can notice that landings are high-traffic areas and you can notice that you get some mixing that occurs right at the landing. You can see the rear tire of this skidder, it has got a little bit of mud and water around it.

You can also notice that the tree-length logs are being -- the tree lengths are being piled by the skidder and that's very purposeful to take up less

area under the landing, and also that the cutters that were putting together this pile were quite practical in their consideration and laying down a birch skid.

And this is a skid to keep the logs up out of the mud for a number of reasons, because eventually these logs have to be debarked and if they are full of dirt and gravel it will make that task difficult.

And, also, if the hauling is going to be delayed, it would be extremely difficult to load those logs if they were frozen into the ground. So that's pretty common practice.

Q. Mr. Oldford, to the untrained eye of someone from southern Ontario, could you tell me whether, what you see there that tire sort of down in the mud I think you described it, is that rutting?

A. No, that's not rutting in the context of rutting where a deep rut is created and rutting -- we don't see much of that anymore on operations. All of that is -- all that there really is, is a little mixing of the humus soil with water and immediately after that pile of tree length -- that load of tree length is moved off that roadside, planting operations could occur anywhere in that area.

Q. So when you talk about rutting, the

evidence has been that measures are taken to avoid it. But let's assume it occurs, what are we talking about; if it is not that, what is it?

A. Well, what comes to mind when I think of rutting is the type of disturbance that one could get if operations were carried out on wet clay soils or deep organic soils during the frost-free period where the machine might sink to -- about a third to a midway to halfway up the tire, that is rutting.

And that's the type of activity that has been very much avoided by the introduction of high flotation equipment and by the judicious use of narrow tired and low flotation equipment on those sites only during the frozen period. And during the frozen period, those sites can be operated with normal standard equipment.

Q. And is there anything about -- anything in that picture which would help one understand why a tree-length method maybe was used or would be appropriate?

A. Well, when I look at that picture I would say that a tree-length method is quite appropriate here. One could also use a shortwood method, but it would involve more labour.

If you look at the stand in the

background, you can see that it is very likely an over-mature stand, it is an over-mature stand that is sort of beginning to break up.

Actually, had this stand been harvested maybe 10, 15 years ago the yields would have been higher, but because in Ontario we have a lot of the wood that's mature and over-mature, you can't necessarily get to all of the stands at the right time. And I believe Mr. Osborn was very exact in pointing that out.

Now, in a stand with variable sizes of trees, the tree-length method is an excellent method because many of the more mechanized methods work better in trees -- in stands of trees where the trees are relatively the same size and where the stands are relatively pure. And I can see from this picture that this stand is somewhat mixed.

MR. MARTEL: Can you tell me where -- you talked about accidents two or three times. Have you got an analysis to indicate specifically the type of accidents and where those accidents occur. For example, a widow-maker, is that what creates most of the accidents, or is it delimbing?

MR. OLDFORD: Well, sir, most companies, and I know the company that I was employed with,

Abitibi had a very rigorous process by which each and every accident was analysed. And I guess the types of accidents which are incurring on an operation would be very much dependent on the type of operation that you are conducting.

Now, the operations in Newfoundland were largely shortwood and tree-length and in the shortwood operations, it was a manual operation with piling of wood by hand and we had quite a lot of injuries from delimbing and from what we term slips and falls.

The tree-length operation, you wouldn't have as many slips and falls because the workers weren't moving around on the ground as much, but you would still incur the delimbing injuries, the cuts with chain saws.

For instance, on a full-tree logging method, like 65 per cent of the logging in Ontario is now by full-tree, the injuries for sure wouldn't occur as a result of chain saws because there are none used on the site.

What you could do - and I believe we could get copies to provide you with - is the Ontario Forest Products Accident Prevention Association Annual Report, and they categorize all of the injuries by type and class. As a matter of fact, a little later on in

our evidence we are going to refer to a graph in that report because the increase in the full-tree or the mechanized logging method has coincided with a very dramatic decrease in the number of injuries.

Speaking about full-tree, now we can move on to the full-tree logging method in the boreal forest. And, as I mentioned before, 65 per cent of the logging occurs by this method and the growth of this method is largely due to economic considerations, availability of manpower, changing technology and changing values in the work force. I credit a lot of that to the development of that method.

MR. FREIDIN: Mr. Chairman, we will come back after the slides to expand or give a little bit more evidence on those particular matters.

MR. OLDFORD: This is slide No. 10. This is a feller-buncher working in the Kapuskasing area. Now, this feller-buncher is a piece of the mechanical equipment that I referred to that often is used. It is one piece of equipment that can be used in the full-tree method, right at the front end of the full-tree method felling the trees.

This stand is particularly suited to full-tree logging. As you can see, it is practically pure spruce, it is very branchy; in other words, if it

was going to be cut by the tree-length method there would have to be a tremendous amount of manual delimbing. So in this type of a stand, ideal for full-tree, here we are using a feller-buncher.

Also, this site is a wet site. This is one of those sites where one could incur significant site disturbance if the machinery is not properly equipped. And, in the case of this machine, it is on tracks and there is no problem at all with site disturbance, even operating in the frost-free period.

MR. FREIDIN: Q. Could we just go back to that picture. Is there anything about the stand itself which makes it a stand where full-tree logging would occur?

MR. OLDFORD: A. Well, I mentioned that the stand -- the trees were about the same size, they run about seven or eight trees per cubic metre of wood, solid content, that the trees are very limby and a lot of time -- if you were using, say, the tree-length logging method, a lot of time would be spent in the delimbing phase. Those are very obvious reasons for that decision.

Q. All right. Just out of interest, are the cabs on these machines enclosed as well as the skidders?

A. These machines are safe, yes, they meet the industrial standards. They also are equipped with fire extinguishers and some of these machines have built-in full fire protection devices. In other words, if you have an engine fire, there is an automatic fire protection system built right in.

Q. I understand some of them even have air conditioning?

A. Some of them have air conditioning, but I am not -- I haven't had the luxury of getting in one of those.

On this particular site there was quite a bit of evidence of layering, that's the method of regeneration that can be used to augment or to form the final stand in the Clay Belt, and that was referred to by Mr. Armson earlier.

Q. Can we see that in the picture?

A. Actually you can see it, but it is very difficult to see. It is this small spruce and there is a couple of them on either side, but when we took the pictures there was quite a bit of it evident there. I believe we are going to visit some slides later on where it is more evident.

Q. Okay, thanks.

A. This is a close-up of the same

machine and, as I mentioned before, you can see it is a track machine. You can see a nice comfortable cab for the operator enclosed by metal and glass. You can see the felling head of this machine and the ability of the felling head to cut a single tree, hold that tree while it collects a number of trees.

There are all sorts of advantages to using this type of machine. You don't incur the same problems with the directional felling; in other words, getting a tree to fall in the right direction.

Mr. Hynard spoke about those problems yesterday. With this machine it just cuts the tree and can lay the tree down in such a way that the advanced regeneration is disturbed to a very minimum.

Q. So you indicated that this machine would lay them down. When in the process would it do that?

A. Well, it would probably swing a little bit to the right from where it is right now and it would lay them down probably about in your direction, Mr. Freidin.

Q. I better get out of the way.

A. And given the fact these trees were cut up in Kapuskasing and the wood is not all that big up in that area, I think you would be relatively safe

there.

This is a different type of a felling head. It serves basically the same purpose with a saw rather than a shear and it is operating in jack pine. And, as you can see from the picture, I believe it has collected two trees.

Q. Is there any significance to having a saw-type head as opposed to the shear-type that you referred to earlier?

A. Yes, there are some significant reasons. If one was into just pulpwood production, the shear might be a very practical head to use on a feller-buncher, but it does develop some butt shatter. And where in Ontario a lot of the tree lengths go to a saw mill, or part of the tree length goes to a saw mill for lumber production first, butt shatter is totally unacceptable.

There is also some evidence that butt shatter may even lead to lower yields in trees that are used primarily in pulpwood due to the fact that if a butt is shattered you get a lot of splinters and you can't produce as nice a chip when this wood is debarked and goes through the chipper.

This is a similar picture of a slightly different feller-buncher that's equipped with -- that's

on tires that are equipped with chains and it is about to lay down two trees. And this was right adjacent to a cut I guess in the evening and it is sort of getting a little bit dark. And you can see the bunches that it has laid from whence it has come there; one, two, three, four.

And that's the type of a stand that it is working in, very dense, lots of limbs, a stand that would not really be that practical for the tree-length method because of the amount of manual delimbing.

Actually, if a person had that type of a stand and only had the tree-length method as an option, that would be a good stand to harvest in the winter where just the abrasion of carrying the trees to roadside would break off quite a few of the limbs.

Q. Mr. Oldford, is that machine equipped with lights?

A. Well, that's something I haven't mentioned. The two previous feller-bunchers that you saw and this feller-buncher are equipped with lights for night-time operation and that's another added benefit to the mechanized logging systems.

And my opinion, and based on the experience that I have had, mechanized logging is pretty well here to stay and it is the only way that we

are going to be harvesting wood in the not too distant future.

Q. And perhaps before we leave that, just a couple of questions about feller-bunchers, that being one of them. You mentioned in the previous slide butt shatter, and so could you explain what that is? I think you touched on it, but just to make sure everybody understands what it is, perhaps you can explain it.

A. Butt shatter is caused when a feller-buncher equipped with knives, much like scissors, cuts a tree and, as a result of cutting the tree, crushes the butt. It is less of a problem in the summer when the trees are unfrozen and they are sort of growing and everything is nice and lubricated, and lubricated by the moisture in the stem and you don't get so much butt shatter.

But you go out and cut that same tree when it is 25 or 30 degrees below zero, and that shatter can go up the stem quite a distance. And if you are trying to produce logs for lumber or to put the logs through a saw mill first, it would not be a good system to use.

Q. You have also indicated in the pictures that we had feller-bunchers with different

cutting heads, we had some which were tracked and some which weren't.

Is it fair to say that the one common thing about a feller-buncher is that regardless of what head it has or what kind of treads or tires it has, that takes the tree or a number of trees and lays it down in front of it?

A. To the side usually. It wouldn't lay it in front because that's where the standing timber is that it is working against. But it would lay it to the side that's already been harvested. That's a better description, Mr. Freidin.

Also the machines that we are talking about, the feller-bunchers, depending on the site conditions that you are working on, you can order these machines and have them equipped and outfitted to the exacting specification that that site demands.

For instance, you can hire a machine -- you can purchase a machine with pads that might be say, 24, 25-inches wide. That would be pads to move the machine on, tracks, and you can order the same machine with probably 31-inch wide pads.

I have the differences in the specifications if someone was interested. But by going to the wider tracks and, in the case of wheeled

machines to wider tires, it reduces the ground pressure significantly and allows a wider range of operation.

THE CHAIRMAN: Mr. Oldford, what's, in a general way, the range in terms of price of a feller-buncher, if you know?

MR. OLDFORD: They would range in the couple of hundred thousand dollar range, sir, depending on the particular make and the options that you included in the purchase.

THE CHAIRMAN: And would the very small operators be in a position to be able to finance that kind of equipment?

MR. OLDFORD: Actually quite a few of the smaller operators make arrangements with the companies that they are selling and harvesting timber for. It is amazing how many of them have been able to put their resources together to acquire that type of equipment.

THE CHAIRMAN: Thank you.

MR. MARTEL: Could it range as high as 400,000?

MR. OLDFORD: Yes, if it was a feller-forwarder, and we will see some pictures of coring feller-forwarder.

I don't know anyone that has bought one recently, but that is the type of money that you are

talking about. And that does impress upon anyone I guess that's dealing with figures of that magnitude the need for being able to, say, build around one logging method and yet to be able to adapt and modify that logging method across a range of sites because you can't really have money -- capital tied up in equipment that is lying idle while another type of equipment is being used.

So that's part of the reason why we have had such a tremendous advance in different accessories that can be put on these machines.

MR. FREIDIN: Q. The feller-forwarder that we will talk about later differs in terms of where it puts the trees after they have been felled?

MR. OLDFORD: A. Yes, we will get a chance to see that.

Q. Okay.

A. That was slide No. 13. I do think I missed a couple of numbers.

Q. And perhaps just another question. You indicated that these machines sometimes work in the winter?

A. These machines work year round and with - I don't want to hammer the wide tires and mention that too much - but with those type of

amendments to their accessories, these machines can work year round on a wide, wide range of sites.

And that's another feature that favours mechanization in logging, is the fact that the more manual approaches to logging, like the shortwood manual and like the tree-length logging method, these methods experience difficulty in deep snow conditions.

If you can imagine a cutter having to move around in deep snow, carrying a chain saw, trying to get to a tree and cut it off close to the ground. You would have to move the snow, probably drive by the tree with the skidder to create an opportunity to cut the tree close to the ground. Whereas these machines with the mechanical felling head, by the shear power and energy in the machines, you can have felling at ground level in practically any snow depth, good utilization.

Q. In terms of being able to fell closer to the ground, does that have any significance in terms of silviculture, the follow-up treatments on the site?

A. Well, it has a number of important features. I would say one is improved utilization, as I mentioned, because if you can gain a few inches extra on the butt end of the tree it is equal to a couple of feet on the top.

The other thing is that by having the trees cut close to the ground the site is perfectly suitable for subsequent site preparation or renewal activities.

Q. Thank you.

A. This is a picture --

Q. Which slide is that?

A. This is slide No. 14. It is a slide of a skidder showing wide tires and these are high flotation tires. As a matter of fact, a skidder with these tires would have a bearing pressure in the order of, say, two to three to four pounds per square inch.

Q. How much pressure would you have on the ground if you were walking on that site?

A. I guess my bearing pressure would be probably four to five pounds per square inch. Probably it should be three pounds, but probably three to five. Just a little more bearing pressure than that machine.

As a matter of fact, if that machine travelled over a piece of ground and you walked behind it, you would see your tracks in the tire tracks of that machine. Excellent, excellent machine for operating in the Clay Belt.

THE CHAIRMAN: What would happen if it ran over somebody?

MR. OLDFORD: Well, I would say you would have a problem because one to two, or even three pounds is not much if you were only pushing on one square inch, but if you had that much weight pushing on every square inch of your body, yes, you would have a problem.

MR FREIDIN: We thought about trying to demonstrate that but we couldn't find anyone to volunteer.

MR. OLDFORD: Well, here is an interesting feature in this slide. This is one -- there is some advanced regeneration right there, black spruce. Now, that machine - and I have seen this on many occasions - can pass over those types of seedlings and because of the flexibility of the seedlings, especially now and really during the frost-free condition when they can bend and adjust, those machines can brush up alongside those seedlings and travel over them and the seedlings will spring back on a good many occasions.

This is slide No. 15 with the same skidder, wide tires, and it is backed up to a bunch of trees that have been felled by a feller-buncher. And you can see one piece of advanced regeneration that I don't believe will survive. It has been damaged by the

skidder or by the feller-buncher, but there is other advanced regeneration and quite a bit of it -- it is quite prolific on this site, that will form the next stand.

And what this operator is doing, he is connecting a single cable around this bunch of trees to move them to roadside where they will be mechanically delimbed.

I guess the other thing is you can see the trees in the background and that's sort of in the direction that the cut was progressing and you can see the limby characteristics of those trees that would sort of want one, if one had the choice, to exercise a full-tree logging method there.

Q. Now, what kind of site is that?

A. This is a pretty typical lowland spruce site.

Q. Are those the sites where you find spagnum moss that we have heard described?

A. Yes, spagnum moss would be quite prevelant on that site and that moss would form an excellent seedbed for seeding and from the adjacent stand there if it were being left for seed tree.

In the case of this particular area, it was being operated with the idea of using the advanced

regeneration to form the final stand. And if that did not form the final stand, then the area would be sort of sweetened up by planting those areas where the stocking levels were lower.

Q. I am not too sure what spagnum moss would look like even if I saw it, but can you see it in this picture? Is there any that you can point out to us?

A. I guess the brownish stuff right here and there would be very much like spagnum moss. If there was a need to show the Board some spagnum moss during the Panel 11 presentation, I am certain I can arrange for some to be delivered. But it does make an excellent seedbed for spruce in cases where you - as Mr. Hynard mentioned yesterday - you are using regeneration from seed.

And one other feature to point out here is this organic -- the organic matter, the vegetation layer is not at all being disturbed by this machinery operating on the site, even though this operation is right during the middle of the frost-free season around July.

This is a --

Q. Slide 16.

A. This is slide 16, I am slipping.

This is a skidder pulling a load of full trees to roadside and you can see to the right of the skidder there are quite a few trees already out there.

Now, this skidder is equipped with narrow tires and chains and chains on the front tires in order to prevent slippage because, if you can appreciate, when the load is winched up to the back of the fair lead of the skidder - and that's the fair lead, that derek-like apparatus - it puts quite a bit of weight on the back tires and tends to lift the front tires a little bit.

And the way that you can keep down on site disturbance and prevent slipping of your tires on the machine -- of the tires on the machine is to add chains.

This is an upland site, and even though it has been operated in the frost-free condition and I believe, I could check -- yes, this is also in the Clay Belt but it is on a little higher ridge and, like Mr. Hynard suggested, just a small amount of elevation difference can mean a whole different forest type in that area.

Q. Now, Mr. Oldford, you mentioned earlier on these skidders that you have a chain on this winch on the back. If you went back 50 feet or 60

feet, if that is the length of chain or the distance you would have to go to sort of tie up the trees, would you drag them with a chain extended 60 feet, or do you draw them up in the machine in some way?

A. Well, that is interesting and we will get a good chance to see that on the video. But what would happen is, you would back up the skidder to where you were well positioned with respect to the dozen or 15 tree lengths that you are going to skid in and then the skidder operator, usually assisted by one of the cutters, would stretch out the cable and on the main cable there would be a number of chokers. That is the way the tree-length logging would be done where you had separate trees to pick up.

In the case of the full-tree logging, normally you would back the skidder up right to the bunch and then pass the cable around the bunch and winch the bunch up to the fair lead of the skidder and that clears the butts off the ground and probably suspends the load by about one third or so and then move forward.

But very commonly if you struck any type of a grade at all where carrying the full weight of the load and trying to move forward would cause the tires to dig in and cause unnecessary disturbance, the

logical thing to do, and the action that every operator that I know would do, is he would drop the load, advance the skidder, winch the load in and then go forward. And, in some cases, if you are logging on slopes that are broken, that is a common feature.

Q. Now, on the tree-length method where you indicated you would extend the cable and you would have a number of chokers tied around the trees, in that case where you actually tied up -- or you put these chokers on the trees 60 feet away using the tree-length method, would you still bring those up to the butt or behind the skidder before you started to pull them away?

A. Yes, yes, you would. And that is something that you are not going to see in the video, the fact that the chokers are on the main line and that they can be moved back and forth on the main line and that enables you to pick up a whole bunch of individual trees at the same time.

This is slide No. 17 and this is a different machine altogether. This is a coring feller-forwarder. Quite a large machine, about I guess the largest that is used in forest harvesting. That machine would weigh in the order of 40 to 45 tons with a capability to carry about 35 tonnes of cut full trees

and the action that that machine has is very much similar to a feller-buncher in a way.

It can reach out and cut trees at a radius around the front end of the machine and then it lays the trees in a rack on the back of the machine. This particular stand that this machine is working in is a jack pine stand and I believe it is in the Gogama District. Yes, it is.

As a matter of fact, this slide was taken in the early 80s, and at that point in time, that part of the province was undergoing quite a significant infestation of jack pine budworm and there is some evidence of jack pine budworm in the tops of the jack pine trees.

This site is a very dry site with very good bearing capacity. This particular machine would not be used on sites with low-bearing capacity during the frost-free period. As compared to that skidder with about two to four pounds per square inch pressure, this machine would be in the 10 to 14 range and, fully loaded, up in the 20 range, but that is still well within the range for operating on sites with high-bearing capacity.

And there is all sorts of information available for company people to review terrain

classification and bearing information put out -- booklets put out by the Canadian Pulp and Paper Associations, et cetera, to use as a guide in those regards.

This is another view of a similar machine.

Q. Slide No. 18.

A. Slide No. 18, sorry, Mr. Freidin.

Q. It is okay.

A. And that machine is just about to lay two more trees in the back of the rack. It is operating in practically the same type of stand conditions in the same area.

This is a picture of two of those machines, feller-forwarders, moving to roadside with a full load. You can also notice people watching this happening. These are MNR staff out touring the area as part of a regular familiarization exercise.

I can remember when I first went into the Gogama District in 1976, the first thing that my senior technician did, Mr. Jack Cloutier, he said I better show you everything that is going on in this district and we did a tour of all the operations and that is pretty standard for any new person coming into a district. You--

Q. Go ahead.

A. --you get to know the timber company officials, the types of logging operations that are being conducted, the people in the community, the particular problems and concerns of that area.

Q. And that was the slide No. 19, right, Mr. Oldford?

A. Slide No. 19, sir.

This site has been full-tree logged and you can see that there is very little slash on the site and, as a practising forester, I was really pleased when I found the site that wasn't totally buried in slash.

The less slash that I found on a site, the more -- the cheaper I could treat the site, the more hectares I could treat for the same dollars, the easier it was for the planters to plant the site, and this would provide an excellent opportunity for future site preparation and follow-up tree planting.

And I would say that the site preparation cost -- treating a site like this as compared to a site with a lot of slash, the cost would be cut in half.

This is a picture of the same type of machine dumping a load at roadside, a load of trees, and you will get a really good look at that happening

on the video. You can notice in the background that some of the pine have been left behind, they are too large for this machine to cut.

These trees would be cut later and they would be moved to roadside using the tree-length logging method. As a matter of fact, the product out of this white pine in that area is generally used in window sash in the window industry.

Q. Any reason that they would be -- those pine would be taken out using tree-length as opposed to the full-tree?

A. Well, the reason would be quite simple, really; there wouldn't be very many of them to cut in the first place, they would be quite scattered on the site, so a machine -- a skidder would go in with a -- an operator and a skidder would go in after and they move around the site picking them up.

The other reason is the felling heads on the feller-bunchers that you would use in conjunction with the full-tree system would be too small to fell them and a delimber would have a terrible time trying to delimb a very large tree.

Delimbers - and you are going to get a chance to see them in a little while - are suited for trees at about the mid-size range and not for trees

this size.

Q. And I hate to say this, that was slide No. 20 and now we are going to slide 21.

A. This is slide 21, sorry. This is a picture of one of those delimbers. And I believe in this case the delimber has two trees in its grasp at the same time.

You can notice the slash in the foreground and all of that slash -- if those trees were being cut by other than the full-tree method, all of that slash would have to be in a manual tree-length method cut off by chain saw.

Q. Can you just describe how that delimbing process works?

A. Yes. What happens, the machine reaches out -- literally reaches out and picks up the butt of a tree, advances the butt so that it can be grasped and then the delimber strokes out and removes the branches. But I believe when we get to the video, that will be much better than I can describe, that will be described very well there.

This is slide No. 22. This is another mechanical delimber, but unlike the first one that was on tracks, this one is on tires and it is delimbing wood or trees that have fewer branches.

Moving back to the other slide, this is a stand that you would want to have the full-tree logging method in for sure. If you look at the trees in the background you can see the tremendous number of branches on them, lots of branches. But the trees that are being delimbed right here could have easily been cut by the tree-length method but are equally applicable to the full-tree method.

This is slide No. 23.

Q. Just before we go to that one, can you go back to that slide earlier, there is full-tree harvest method on that?

A. Yes.

Q. I am sorry, go back to the one before that, I think that is No...

A. That is number -- slide No. 21.

Q. All right. You were pointing out the number of branches on those trees. Those are spruce?

A. Yes, spruce pretty well. There is some jack pine in amongst them I believe, but it is predominantly spruce.

Q. Now, if you logged that in the winter using the full-tree method, would you lose some of those branches on the way to the landing?

A. You would if you skidded the full

trees to the landing using a cable skidder or a grapple skidder or a forwarder. In other words, if the trees as they were being moved to the landing were in contact with the ground, that would cause the physical abrasion and would leave branches.

Q. Is it normal for them to be in contact with the ground in that operation?

A. Yes, if they are being moved by cable skidder or by forwarder. But in the case of the machine we saw earlier, the feller-forwarder, where they are held up completely in the rack, you wouldn't loose any branches on the site, all the branches would go to roadside.

Q. All right. And when you used that earlier method where the trees would be in contact with the ground, can you even generalize as to what percentage of the branches would in fact break off on the way from where they had been felled to the landing?

A. This is an estimate on my part, but if it was a jack pine stand that you were full-tree forwarding and you were forwarding them via skidder, probably as much as 50 per cent of the branches could break off and stay right on the site. If it was a spruce stand, probably in the order of 30 to 40 per cent of the branches.

Q. Thank you.

A. But that would only occur during the frozen period.

Q. Right. I think we are back to slide 22, is it?

A. This is slide 23.

Q. 23.

A. This is a roadside slasher. A small slasher actually that would be used to reduce tree length or full tree after delimbing to eight-foot lengths. And this is a slide from the northern region - I believe the Chapleau District area - and this operation would normally be in conjunction with wood that was going to be moved directly to a pulp mill in the form of pulpwood.

And this is another slide of wood after it has been -- after tree length, after it has been slashed into eight-foot lengths being loaded on to a tractor-trailer for transport and it is fairly typical of that type of operation.

Q. And that was slide No. 24.

A. Slide 24. Right in front of the machine -- in front of the loader you can see a metal apparatus and that would be -- that is a load aligner. After this truck is loaded fully, the machine will take

hold of that, sort of like a punch, and use it to align the load for safety reasons travelling out of the bush.

But that load aligner is not nearly as well developed as this one which is pretty standard in the industry.

Q. Now, Mr. Oldford, I think you have got eight slides left. I will pay you a dollar for every slide that you give me the number on before you speak to it.

THE CHAIRMAN: Does that apply to us if we tell you the number?

MR. FREIDIN: Only if you give the evidence, Mr. Chairman.

MR. OLDFORD: So that was slide 25, that is my first dollar.

MR. FREIDIN: Q. No, no, I had to correct you on that one.

MR. OLDFORD: A. And now we will take a quick look at the shortwood logging method in the boreal, and that is just a word message and doesn't qualify as a slide.

Now, this is a picture of the manual shortwood and it is pretty typical of what used to happen years and years ago. There is very little of it in Ontario today and I sympathize with any logger that

has to work in this method.

I cut wood like this in '71 -- I believe '71 and '72 and it was one serious task, especially in July or August when things were quite hot and the flies were quite thick. But under this method, as I described earlier, the cutter fells the limbs, cuts up the tree in pieces and using braun piles the wood.

THE CHAIRMAN: You owe him a dollar.

MR. OLDFORD: That is slide No.--

MR. FREIDIN: No, come on, Mr. Chairman.

MR. OLDFORD: --26.

This wood would normally be forwarded to roadside with a machine that picks it up in bunches, a machine called a forwarder.

Slide 27. I will share the dollar with you, Mr. Euler. This is a slide here where we are depicting a shortwood mechanical harvester and this is a picture of one of Canadian Forest Products machines.

And this is an interesting machine in that it has a felling head on a boom that fells a tree, moves the tree around to a tower -- a delimbing tower that delimbs the tree and cuts it in eight-foot lengths and then the 8-foot lengths are piled on this rack on the back of the machine, piled from the bottom.

You will see that in the video and we can

move through the description fairly quickly. Another heavy machine suited to sites moderate-to-good bearing capacity but can operate on all sites during the frozen season.

Q. Are there very many of those operating in Ontario at the present time?

A. Probably not more than three or four. They were quite popular in the early to mid-70s, but everything gets old. The technology has sort of passed it by a little bit and most of the mechanized shortwood harvesters that are on the market today are -- they function quite differently.

Quite a few of them are being used in eastern Canada, in Nova Scotia, Newfoundland, New Brunswick, and used in smaller wood than we normally incur in Ontario. But this was a fairly large -- and still is a fairly large shortwood harvester and very few are working today.

Same machine, slide No. 28, a different perspective on the same machine.

Slide No. 29. This is loading 2.5 or 8-foot wood. Just a typical loading slide and three quick slides to run through now to conclude.

Q. Before you just go to the next few slides. Those shortwood harvesters, you say they are

not being used very much any more. I am not sure whether you gave the reason for that.

A. Well, I said that they are older machines, the technology has sort of passed them by, most of the developments now in the mechanized shortwood harvesters are aimed at trees that are a size smaller than Ontario's trees and quite a few of them are being developed in Scandinavia, and some of that equipment has been imported into eastern Canada, although I do know that some of that equipment has been tried in Ontario.

Slide 29, that is loading shortwood.

Slide 30, that is 2.5 metre or 8-foot wood moving to a mill.

Slide 31, that is logs moving to a saw mill. And the concluding slide is slide No. 32. That is tree-length logs loaded on a tractor-trailer.

And I guess the closing message that I would like to leave today is that all of this occurs to supply the mills that employ a lot of people in this province.

Q. I owe you 6.50.

A. Six dollars, Mr. Freidin.

THE CHAIRMAN: Pay up now, Mr. Freidin.

MR. FREIDIN: Mr. Chairman, to what hour

did you wish to sit?

THE CHAIRMAN: Well, if you are going to start a new area, I think this might be an appropriate time to break for the day.

MR. FREIDIN: Yes, I was. And just to give an indication of where I am going tomorrow, we will be reviewing the various factors which can influence the selection of a particular logging method - it was touched on at the very beginning - we will go through that in a little more detail.

We will be discussing after that -- or we will be expanding a little bit on the labour and safety aspect of the choice, dealing with I think the question that Mr. Martel asked in a general way. I have a number of just general questions about the various equipment, and then we are going to show that video.

So I think we will probably finish with this witness in the morning some time.

THE CHAIRMAN: Well, we are going to commence in the morning at 8:30 and we are going to start off with the scoping session for Panel 11 and we are also going to deal with the calling of Dr. Baskerville - and we may be in a position to make a ruling with respect to Ms. Swenarchuk's motion this afternoon - then we will get to Mr. Oldford again.

MR. FREIDIN: There may be a fourth matter that Ms. Murphy may be wishing to speak to and that is the terms and conditions that we discussed before. I think the original order of the Board was that those terms and conditions were to be delivered at the end of Panel No. 10. We may want to speak to that tomorrow. So if can we hold open a fourth spot on the agenda for procedural matters, I would appreciate that.

THE CHAIRMAN: Very well. Thank you, ladies and gentlemen, we will adjourn until 8:30 tomorrow morning.

MR. FREIDIN: Are we sitting to the usual 1:30 or two o'clock?

THE CHAIRMAN: That's correct.

---Whereupon the hearing adjourned at 5:10 p.m., to be reconvened on Friday, March 3rd, 1989, commencing at 8:30 a.m.